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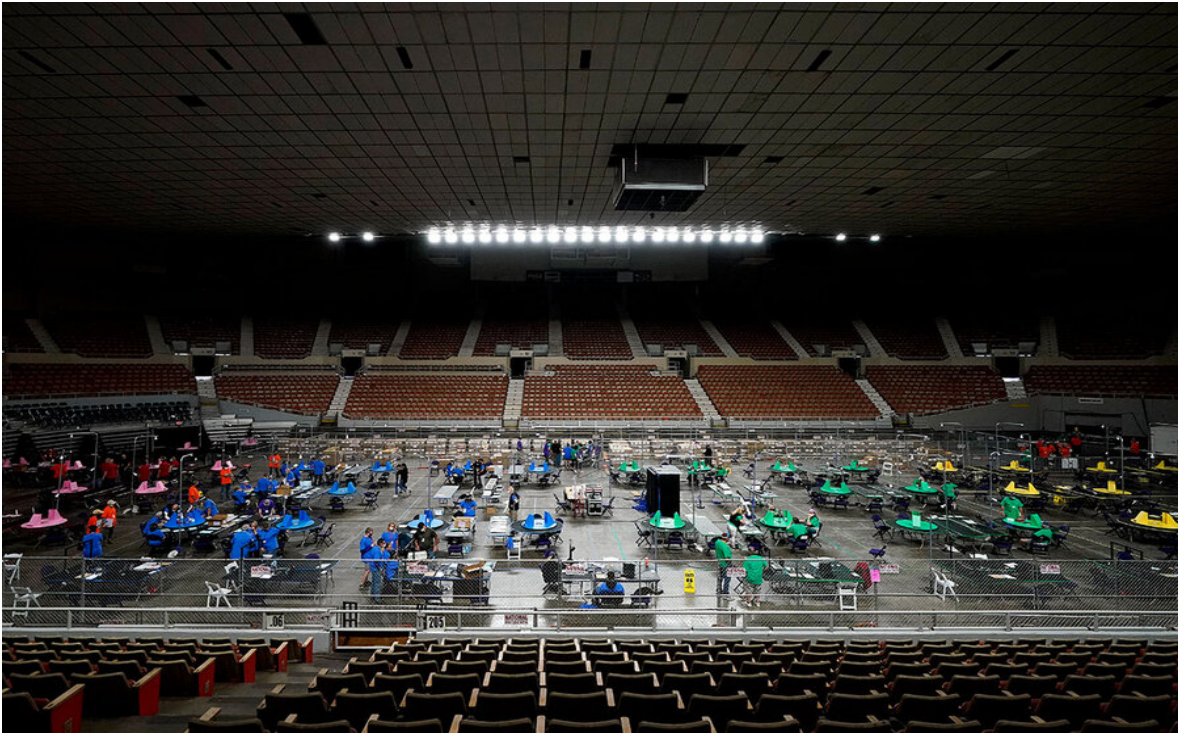
Lessons from Maricopa County:
Slow Facts versus Fast Lies in the
Battle Against Disinformation

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Contents

Our Purpose	3
Background	4
The Cyber Ninja "Audit"	5
Section 1: Allegations & Rebuttal	5
Section 2: For the Ninjas hand count, an audit is impossible.	10
Section 3: Why do we require an auditable recount?	11
Section 4: Two Challenges	12
Conclusion.....	13
Our Team.....	13
Appendix A: MAPS - Voter turnout by precinct and Disaffected Voters	14
Appendix B: Public Records.....	19
Appendix C: Cast Vote Record	20
Appendix D: The Daily Ballot Summary Report (the "Blue Sheets")	22
Appendix E: Ballot Custody Transfer Manifest	24
Appendix F: From a box label to its ballot and vote counts.....	26
Appendix G: Many points of comparison – the key to a credible audit	27
Appendix H: Key Documents.....	28
Arizona State	28
Maricopa & Pima County	28
Legal Proceedings.....	28
Analysis Products	28
Critical Reviews: Two reports provide background information on the Arizona Senate Election Review	29
Appendix I: Media Coverage of Our Analysis.....	30



In response to an unprecedented court order, Maricopa County turned over the 2020 general election ballots to the Arizona Senate, which contracted with an inexperienced firm, the Cyber Ninjas, Inc., to conduct an audit of 2.1 million ballots. Compared to the official ballot count, the Ninja's count was sufficiently different that the Senate President ordered a separate ballot count, which is still underway at this time.

Our Purpose

People unfamiliar with elections are unaware of how the pieces fit together. To most registered voters, voting is simple: you get your ballot, make your selections, feed your ballot into the voting machine, or return it by mail. Then, on Election Night, you watch TV to see who won.

But, for those like us, who have built a federally certified voting system, or who have closely monitored election administration and outcomes in a swing state, elections are anything but simple. The patchwork of election laws, procedural inconsistencies, contradictory technical requirements, and a highly polarized electorate have set the stage for the large-scale disinformation campaign we are currently experiencing.

Now, at a time when "concerns," not facts, drive legislation, and when specious "forensic audits" erode the winner's right to govern legitimately, we are compelled to fight back by providing factual analysis.

With over 35 years of combined election experience, we know that there are publicly available tools and data that can debunk election disinformation. If legislators, litigators, and judges were aware of this data, they could be more effective in stopping additional "forensic audits." Armed with hard data, the media could shift the narrative away from anecdotal "evidence" and "concerns" to facts.

The purpose of this report is to use the Maricopa "forensic audit" as an example of how public data can be harnessed to fight disinformation and, hopefully, to thwart the further expansion of these threats to our democracy.

Background

Almost immediately following the November 3, 2020 election, nationwide claims of widespread fraud and illegal election activity occurred. One focus of these claims was the Dominion election management system used by Maricopa County, the only county in Arizona to use this system. The claims that the system had produced inaccurate results were based on several, sometimes conflicting, allegations, including:

- Claim: “Concerns” fueled by the disbelief that Trump could lose in Maricopa County where Republicans outnumber Democrats by 100,884 voters (3.89% of total Maricopa County voters) required a “forensic audit” to restore public confidence.
- Claim: 40,000 illegal ballots were counted
- Claim: 240,000 hand-adjudicated ballots heavily favored Biden

On November 30, 2020, Rudy Giuliani and other Trump supporters held a public meeting in Phoenix while the 2020 General Election results were being certified by the Arizona Governor and Secretary of State. Many claims of irregularity were made without any evidence¹. On December 14, 2020, Senator Farnsworth held a hearing regarding the November election², followed by a subpoena from Senator Farnsworth and Senator Fann to the Maricopa County Board of Supervisors (Board) to produce certain election materials. The Board fought that subpoena and won. Senator Fann’s email records show extensive communication between Senator Fann, Rudy Giuliani, and Donald Trump in the days and weeks leading up to what became the “forensic audit.”³

Soon after beginning the legislative session in January 2021, Arizona Senate President Fann and newly installed Judiciary Committee Chairman Warren Petersen issued new subpoenas to Maricopa County but not any other county. Included was the requirement that the Board must transfer custody of the physical ballots, ballot images, election materials and records, and election equipment to the Senate. Without defining the term, the Senate wanted a “forensic” audit⁴. The Board fought parts of the Senate’s subpoena, but judge Timothy Thomason of the Maricopa County Superior Court ultimately ruled in favor of the Senate. Maricopa County then transferred certain election materials, physical ballots, and election machines to the Senate. Judge Thomason’s order was based on a finding that access to the election materials and ballots, including ballot images, should be granted under the legislative authority to conduct investigations to form and consider legislation. However, he also presumed that the items covered by the Senate subpoena would remain in the custody of government officials who routinely handle such materials and protect their confidential nature. In the Maricopa County situation, the Senate hired a third-party contractor, who then hired subcontractors, to handle and evaluate the materials and records, thereby removing them from the custody of election and government officials, contrary to statutory requirements and Judge Thomason’s presumptions.⁵

¹ [*‘Arizona GOP lawmakers hold meeting on election outcome with Trump lawyer Rudy Giuliani’*](#)

² [*‘Arizona Senate will subpoena Maricopa County for election audit’*](#)

³ [*‘Email dump shows Arizona Senate president touting ‘personal call’ from Trump on election fraud claims’*](#)

⁴ <https://www.scribd.com/document/516855504/Maricopa-Election-Senate-Audit-Timeline-Handout>

⁵ <http://www.courtminutes.maricopa.gov/viewerME.asp?fn=Civil/032021/m9467954.pdf>

The Cyber Ninja "Audit"

Once in possession of the ballots, the Senate hired an outside contractor, Cyber Ninjas, Inc. [Ninjas], to conduct an undefined "forensic audit" and publish a report that the Senate could use to formulate new legislation to fix any problems discovered during the "audit."

Once we began seeing the Ninjas' novel, lazy Susan-style turntable approach to recounting ballots by hand, their lack of transparency on the treatment and counting of batches, and their incorrect assumptions about ballot organization, three things were apparent: 1) the Ninjas' were doing nothing to confirm or dispute the allegations mentioned above, 2) any count of ballots would almost certainly be inaccurate⁶, 3) it would be nearly impossible for the Ninjas to compare their hand-count result to the official results. The Ninjas' count of ballots and votes is inaccurate primarily because of the inherent inaccuracy of their methodology – first, their fast-spinning ballots on lazy Susans giving the counting teams about a second to record their vote, and second, manual data entry of thousands of tally sheets. Former Republican Secretary of State of Kentucky Trey Grayson and election expert Dr. Barry C. Burden provided evidence of more problems with the Ninjas' methodology in a 24-page report.⁷

The Senate realized that the Ninjas' total ballot count was off in late June and initiated a separate ballot count using high-speed paper counting machines. Preliminary results are described in Section 3 below.

Our first task was to debunk the allegations that led to the Senate's successful subpoena.

Section 1: Allegations & Rebuttal

1. Allegation: Many people have "concerns" over Trump's loss in Arizona; a "forensic audit" is necessary to restore public confidence.

There is a simple explanation of why President Trump lost Arizona.

Finding: A silent minority of slightly less than 75,000 disaffected Republican supportive voters⁸ sealed Donald Trump's defeat.

Here is the data:

- Trump lost Arizona because 74,822 disaffected Republican supportive voters in Maricopa (59,800) and Pima Counties (15,022) decided not to vote for him⁹.
- The most highly disaffected of those, 48,577 (65%) voted for Biden; the remaining 26,245 (35%) voted for candidates who could not win (e.g., the libertarian candidate) (19,873), or by overvoting (2,009), or by voting for no one (4,363).
- To put the 48,577 disaffected Republican voters who voted for Biden in perspective, they represent 4.6 times the statewide margin of Trump's 10,457 vote loss to Biden. (See **Appendix A**)

Public Data: We used the Cast Vote Record (CVR) to perform the above analysis. It is the only election report that shows the vote patterns on individual ballots. Importantly, the CVR permits analysis on which candidates voters voted for on down-ballot races and those they did not vote for. (See **Appendix B**)

⁶ In our experience, without well-developed ballot control procedures, it is difficult to maintain a ballot count. Without an accurate ballot count, accuracy in the vote count is impossible.

⁷ <https://statesuniteddemocracy.org/wp-content/uploads/2021/06/6.22.21-SUDC-Report-re-Cyber-Ninjas-Review-FINAL.pdf>.

⁸ Disaffected Republican supportive voters are defined as voters who voted for a majority or more of Republican candidates at the county level and above but who did not vote for Trump. In Maricopa County, the majority was 8 out of 15 Republican candidates; in Pima County, it was 7 out of 13 Republican candidates.

⁹ <https://www.scribd.com/document/517077647/Analysis-of-Disaffected-Voters-in-Maricopa-County>

2. Allegation: 40,000 illegal ballots cast in Maricopa County gave Biden the win.

Finding: There were no abnormalities in voter turnout across precincts; there was a qualified voter for every ballot cast. The reported method of voting by individual voters and canvass results for all races matched precisely.

Allegations like these reflect a lack of understanding of how checks and balances work in an election or how easy it is to refute the allegation. This allegation is easily disproven by looking for abnormalities in voter turnout by precinct and matching ballots counted to voters who cast a ballot.

Benny White is a data analyst who has done data analysis for the Arizona Republican Party and numerous campaigns for 25 years, closely monitoring and evaluating voter turnout. With access to the “Voted File,” statewide voter registration files, as well as the daily Early Voting reports, Mr. White continuously monitors Early Voting activity and analyzes voter turnout for every Arizona county. See **Appendix C** for a description of these two files.

An element of the disinformation was an assertion that these 40,000 ballots likely had only voted for President; otherwise, it would take too long to fill out all races. Table 1 debunks that allegation.

Voters cast these ballots in widely distributed precincts, not in any concentrated area.

Ballots With Only One Vote Mark (President)				
Candidate	Voting Method			
	Total	Early	Election Day	Provisional
Biden	3024	2575	406	43
Trump	3474	2833	577	64

Table 1: Number of ballots with only a mark for a candidate in the race for President.

In addition to the single vote mark analysis described above, injecting ballots into the election results could be detected in a variety of other ways:

- The discontinuity between the daily ballot tabulation records and their associated ballot images in the Cast Vote Record
- Disagreement with the daily Early Voting Requests and Returns
- Variation in the voter turnout analysis at the precinct and jurisdictional levels
- Disagreement with “voted file” and voter histories recorded in the voter registration records, i.e., there must be a qualified elector associated with every ballot that is counted and reported;

Conclusion: One can not simply dump extra ballots into the system; they are too easily detected.

There have been many discussions about mail ballots and the effect those ballots may have had on the results. The Cast Vote Record, “Voted” file, and voter histories from the voter registration files provide an enormous amount of information to help the public understand what happened during the election.

The charts and tables below demonstrate that Joe Biden was never behind Donald Trump during the entire election period in Maricopa County. Note that none of these daily vote totals were available until the Cast Vote Record was published on the same day the Official Canvass results were published.

Date	Total Trump Votes	Daily Trump Votes	Total Biden Votes	Daily Biden Votes	Biden Margin
2020-10-20	41,436	41,436	80,476	80,476	39,040
2020-10-21	86,244	44,808	157,012	76,536	70,768
2020-10-22	141,685	55,441	242,927	85,915	101,242
2020-10-23	200,932	59,247	334,244	91,317	133,312
2020-10-25	202,130	1,198	335,781	1,537	133,651
2020-10-26	263,279	61,149	418,669	82,888	155,390
2020-10-27	311,561	48,282	479,136	60,467	167,575
2020-10-28	377,781	66,220	554,852	75,716	177,071
2020-10-29	442,437	64,656	617,425	62,573	174,988
2020-10-30	512,558	70,121	684,644	67,219	172,086
2020-10-31	574,388	61,830	737,534	52,890	163,146
2020-11-01	635,460	61,072	786,507	48,973	151,047
2020-11-02	701,113	65,653	828,540	42,033	127,427
2020-11-03**	829,902	128,789	905,381	76,841	75,479
2020-11-04	850,504	20,602	922,146	16,765	71,642
2020-11-05	925,317	74,813	982,508	60,362	57,191
2020-11-06	978,775	53,458	1,024,342	41,834	45,567
2020-11-07	980,659	1,884	1,027,108	2,766	46,449
2020-11-09	984,376	3,717	1,030,411	3,303	46,035
2020-11-10	986,837	2,461	1,032,377	1,966	45,540
2020-11-11	994,643	7,806	1,039,258	6,881	44,615
2020-11-12	995,665	1,022	1,040,774	1,516	45,109

*Note: This table only includes Votes for Biden and Trump

Does not include votes for Jorgensen, Write-in, Undervote and Overvote

** As expected Trump gained the most votes on Election Day but netted only 51,948 leaving him 75,479 behind Biden.

Table 2 Cumulative Daily Vote Totals for Trump and Biden

The chart below shows the same data from Table 2 above in a graphical format:

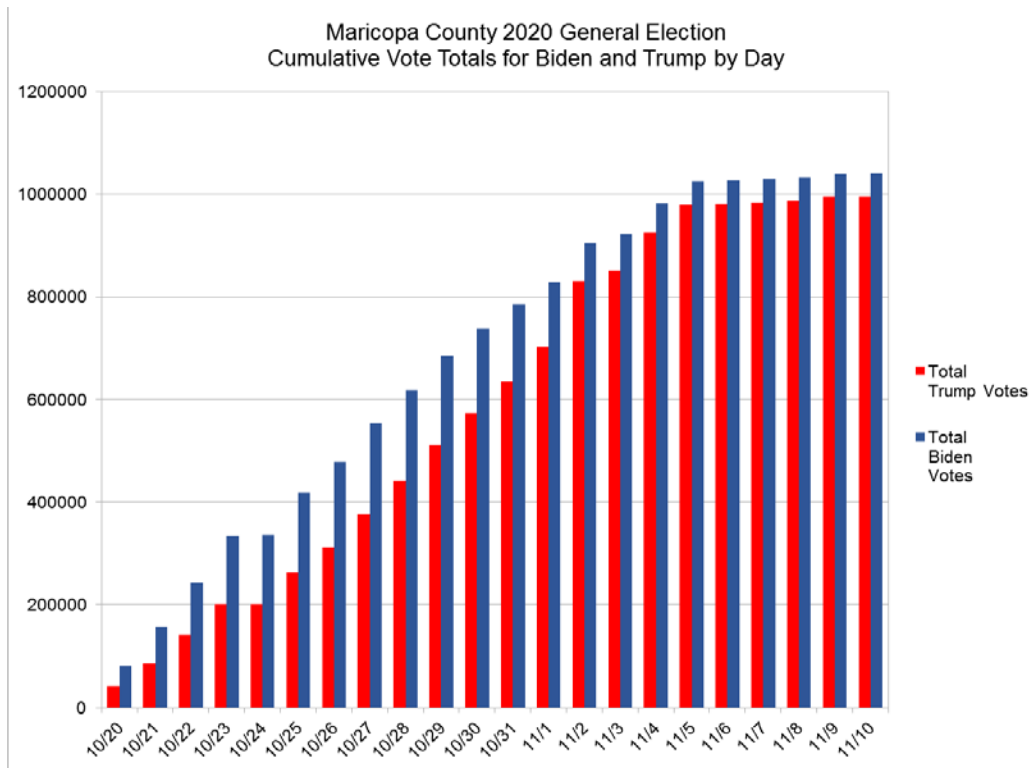


Figure 1 Cumulative Votes for Trump and Biden

The chart shows that Biden maintained a comfortable lead from the first ballot counting on October 20 until November 2, then the lead shrank substantially. Between November 3 and November 6, the last of the mail and Early Ballots were being counted. After November 6 the final provisional ballots and duplicates were verified and counted but there was no substantial change in the results for the two candidates.

The next question is “Who are these voters” who cast those last-minute mail ballots and who voted at the polls. The “voted” file and voter history answers those questions as well. Here is that data:

Last minute mail ballot returns - Either returned in the mail or dropped off at the polls on 11/3/2020							
Vote Method	Total	DEM	REP	PND	IND	LBT	Other
Mail	187,755	51,396	70,065	56,746	6,562	2,736	250
Percent of Total		27.4%	37.3%	30.2%	3.5%	1.5%	0.1%
Voters Who Went to the Polling Places on Election Day							
Vote Method	Total	DEM	REP	PND	IND	LBT	Other
Polling**	174,038	37,745	71,734	55,700	5,779	2,902	178
Percent of Total		21.7%	41.2%	32.0%	3.3%	1.7%	0.1%
** Polling includes both regular ballots and 6,198 Provisional Ballots that were verified and counted							
Total Mail and Early Voting Ballots Cast by Party Voters							
Vote Method	Total	DEM	REP	PND	IND	LBT	Other
Mail	1,914,785*	651,255	730,818	432,425	81,774	16,676	1,837

This does not include ballots Cast by voters whose records are sealed by court order.

Figure 2 Party Affiliation of Late-Returned Mail Ballots and Polling Place Voters

Figure 2 shows that the Republican voters retained their mail ballots until the last minute and then returned about 20,000 more ballots than the Democrats. There were also more Republicans, about 36,000 more, who went to the polling places on Election Day. Those ballots cast by Republican voters helped reduce the lead Joe Biden had over Donald Trump in the mail and early voting before Election Day but there were not enough of them to win.

3. Allegation: There was an error rate on 11% of the ballots requiring manual corrections that could have heavily favored Biden.

Finding: It is true that 235,392 ballots did require review by electronic adjudication boards however, in the Presidential race, only 11,954 ballots were electronically adjudicated.

This allegation was pure disinformation. It implied that the voting systems were inaccurate, that manual corrections affected the Presidential contest, and that there was potential collusion among the staff to award undeserved votes to Candidate Biden. It was, however, effective in casting doubt on the integrity of the Maricopa election.

Overvotes can be detected during in-person voting on Election Day, and the ballot is returned to the voter to correct the mistake. There is no such option when the voter mails in her ballot or votes in-person before Election Day. Today, most modern voting systems can detect ambiguous voter intent. In Maricopa County, more than a dozen three-person teams made up of at least one Democrat and one Republican to adjudicate ambiguous voter intent. Together, they look at the ballot image on a computer monitor, assess voter intent, and submit it for inclusion into Cast Vote Record.

Effective disinformation starts with a kernel of truth. Below is the breakdown of all electronic adjudications, including detail for the Presidential contest:

	235,392	Total number of ballots reviewed by electronic adjudication
Minus	111,660	ballots reviewed with NO changes
Equals	123,732	ballots with adjustments
Minus	66,074	ballots with ONLY write-in assignments
Equals	57,658	ballots with adjustments excluding write-in assignments
Minus	11,954	ballots with adjustments to President contest (see below)
Minus	8,085	ballots with adjustments to US Senate contest
Minus	37,619	ballots with adjustments made to other down-ballot contests
Equals	0	Remaining adjustments by electronic adjudication

Table 3: Reconciliation of electronically adjudicated ballots – all contests

Results of electronic adjudication of ambiguous voter Intent for the Presidential contest.					
Voter intent adjustments made by electronic adjudication	Voting Method			# Ballots	Notes
	Early	Election Day	Provisional		
Trump	1,472	17	27	1,516	Difference: 553 for Biden
Biden	2,033	9	27	2,069	
Jorgensen	117	1	2	120	
Overvote	264	13	5	282	
Undervote	25	0	0	25	
Qualified Write-in	1,224	99	8	1,331	Total: Write-ins: 7,942
Unqualified Write-in	5,848	750	13	6,611	
Total	10,983	889	82	11,954	

Source: Cast Vote Record, Maricopa County 2020 General Election.

Table 4: Reconciliation of electronically adjudicated ballots - presidential contest

Section 2: For the Ninjas hand count, an audit is impossible.

An audit is a comparison of two independently produced results based on the same data. Maricopa Elections produced one set of independent results, the Ninjas another. The physical ballots are the data both have in common.

The Ninjas counted ballots and votes by storage box. However, Maricopa does not report ballots and votes by storage box because there has never been a need. Therefore, an audit of the hand-counted ballots was impossible for the Ninjas.

To make an audit of the Ninja's recount possible, we reformulated the Cast Vote Record data to make an "apples-to-apples" comparison possible.

Two hand-written reports made our reformulation possible. Maricopa County creates the Daily Ballot Summary Sheets (DBS) to maintain ballot control; it tracks every ballot from when it passes signature verification until it is tabulated. (see **Appendix D**) Second, is the Ballot Custody Transfer Manifest (Manifest). The Manifest is a 50-page record of the contents of every box transferred to the Senate. We used the Manifest as a quality check on the DBS. (see **Appendix E**).

We compared ballot counts for each of the three voting methods to the official canvass to test our reformulation. The table below shows that it is a perfect match at the grand total and subtotal levels. The importance of matching the official ballot count cannot be overstated.

As shown in Table 5, all the ballots officially counted are contained in 1,634 boxes. However, Maricopa transferred 1,691 boxes. The remaining 57 boxes contained miscellaneous election materials, including ballots that should not be counted (e.g., the original ballots for which duplicates were made, spoiled ballots, etc.).

Voting Method	# Boxes with counted ballots	# Batches	# Ballots (CVR reformulation)	Official Canvass (See pg 3)	Difference
Early Voting	1,515	9,944	1,915,487	1,915,487	0
Election Day	114	358	167,878	167,878	0
Provisionals	5	39	6,198	6,198	0
Total	1,634	10,341	2,089,563	2,089,563	0

Table 5: Quality check on ballot counts by Voting Method

Section 4 discusses the events leading to the Senate ordering a second ballot count using accurate high-speed paper counting machines. As a final check to our reformulation of the CVR, we obtained ballot counts on 24 boxes.

Twenty of the boxes matched perfectly. One box had an 18-ballot difference – likely a transposition error (1179 (Ninja) versus 1197 (cast vote record)). Two of the remaining three boxes each had a one-ballot difference; the third had a two-ballot difference. Across all 24 boxes, the report from the high-speed paper counter was 32,692 ballots; the CVR count was 32,710 or a match of 99.933%. After correcting for the obvious transposition error, the match was 99.988%.

Assuming the Ninjas know which boxes to count and the ballots counted carefully, the Senate-ordered high-speed count is on track to confirm the official ballot count.

If the high-speed ballot count confirms the official ballot counts, the Ninjas' vote counts will not be close. The entire exercise will be revealed to be a hoax.

Section 3: Why do we require an auditable recount?

In short, without an audit, it would be nearly impossible to refute another round of disinformation.

After two months of manually counting ballots, just as the count was finishing, Senate president Karen Fann abruptly said, without specificity, that the Ninjas' ballot count did not match the County's.¹⁰ She ordered a separate count of the ballots using high-speed paper counting devices¹¹.

In an open letter to Senator Fann¹², we applauded her desire to obtain an accurate ballot count. We provided a spreadsheet with two critical pieces of data: 1) the ballot counts for each of 1,634 boxes based on our reformulation of the CVR, and 2) an accurate inventory of the boxes containing ballots that should be counted. As with our first communication, we did not receive a response.

Without a comparison to the official results, the Ninjas could say anything. Senator Fann has already said that the Ninja's count did not match the official count. Without verifiable details, statements like hers spawn more disinformation. Senator Fann has already blamed Maricopa County Elections Department¹³. She has said:

- Maricopa Elections Department was uncooperative,
- ballots were missing,
- files were deleted,
- there was no way to be sure which ballots should be counted,
- critical pieces of equipment were not delivered (e.g., routers),
- equipment could not be accessed due to passwords not being provided.

Many of these allegations have been proven false.

Without an independent count – ballots, and votes – to compare the Ninja's count against, there would be no way to audit the Ninjas' much-criticized recount. Without numerous points of comparison, quickly analyzing and resolving discrepancies would not be possible.

The information we have provided will enable an audit with 1,634 **ballot** points of comparison – one for each box. There are 8,170 **vote** points of comparison – five candidates multiplied by 1,634 boxes (the Ninjas were counting five candidates – three in the race for President and two for U.S. Senator).

It would be Intentional disinformation if the Senate published a report that showed five numbers - the grand totals for the three candidates in the Presidential contest and two for the candidates in the U.S. Senate contest.

The threat of more disinformation is real. On July 15, 2021, Senator Fann and Senator Petersen held a hearing on the Senate election audit. In less than 24 hours, former President Trump said the Ninjas had uncovered a "massive number of voter irregularities and fraud."¹⁴

Donald Trump continues to repeat these false allegations.

¹⁰ "Ballot counts do not match". <https://www.azcentral.com/story/news/politics/elections/2021/07/13/arizona-audit-karen-fann-says-cyber-ninjas-maricopa-county-tallies-do-not-match/7958726002/>

¹¹ 'Why the multiple counts of Maricopa County ballots probably will not match' <https://www.azcentral.com/story/news/politics/arizona/2021/07/09/why-multiple-counts-maricopa-county-ballots-probably-not-match/7919653002/>

¹² <https://www.scribd.com/document/517080947/Open-Letter-to-Senator-Karen-Fann-July-12>

¹³ Fann letter to Maricopa Board of Supervisors, May 12, 2021. <https://www.documentcloud.org/documents/20706832-5-12-21-letter-to-maricopa-county-board-1>

¹⁴ Factcheck.org, "Debunking Trump's Latest Arizona Election Claims," July 20, 2021 <https://www.factcheck.org/2021/07/debunking-trumps-latest-arizona-election-claims/>

Section 4: Two Challenges

When we found out that the Ninjas were withholding counts and other information from Ken Bennett, the Senate liaison to the Cyber Ninjas, we decided to challenge the credibility and accuracy of the hand-count.

We issued our first challenge on June 7, 2021¹⁵. We urged Senator Fann to increase her “audit” transparency by randomly comparing their ballot and vote counts with the Cast Vote Record, which we were beginning to reformulate as described above. We intended to increase transparency by publicly confirming the accuracy of their count and, in their confirmation, set them on a path to confirm or dispute the official results credibly.

More importantly, we wanted to signal to Senator Fann and the Ninjas that we could hold them accountable.

We believe that our first challenge set a chain of events in motion that resulted in Senator Fann’s statement on July 13 that “the results do not match”¹⁶ and which factored into the Senate’s decision to seek a second count of ballots.

Timeline of events between our first challenge and now	
6/7/21	Benny White issues first challenge letter to Sen. Fann
6/9	AZCentral, AZ Republic’s online edition, publishes an article with the headline: “Election experts offer challenge to Cyber Ninjas: We can count ballots without opening boxes.”
6/10	Arizona Republic morning print edition publishes a lead article with the headline, “Put up or Shut Up”.
6/10 @ 3:50pm PDT	We emailed PDFs to AZ Republic under embargo with ballot and vote counts for two boxes.
6/10 @ 4:07pm PDT	That email was forwarded to Ken Bennett with the copy to the AZR visible. Had he said he would check out our counts, we would have waited to publish both results.
6/10 Approx 6:00 pm PDT	Ronald Hansen, the pool reporter for the AZ Republic, was at the Arena when Bennett received the email. Bennett told Hansen, they [the Senate] were here to do a full audit, this [our counts] is a partial audit, we don’t do those. As pool reporter, Ronald had a complete recording of his conversation.
6/12	The morning edition of the Arizona Republic’s lead article ran with the headline, “Senator Fann not responding to recount challenge.”
7/1	Ken Bennett refers to an upcoming second count ¹⁷ .
7/1	Ballots moved to Wesley Bolin Building ¹⁸
7/9	High-speed paper counting machines installed ¹⁹ .
7/12	Second Challenge Letter sent to Sen. Fann, includes a spreadsheet with ballot counts from 1,634 ballot boxes (out of the original delivery of 1,691 boxes ²⁰)
7/13	Senator Fann announces that the Hand Count results don’t match ²¹
7/19 – 7/22	We receive confirmation from Ken Bennett that the high-speed counting machines were on track to confirm the official ballot count. ²²
7/23	Ken Bennett is locked out of the Wesley Bolin Building. ²³
7/26	Ken Bennett threatens to resign unless there is more transparency from the Ninjas. ²⁴

¹⁵ <https://www.scribd.com/document/517078924/Challenge-Letter-to-Senator-Karen-Fann>

¹⁶ <https://ktar.com/story/4564937/sen-fann-says-audit-ballot-totals-dont-match-maricopa-countys-numbers/>

¹⁷ <https://www.nbcnews.com/politics/elections/months-behind-schedule-arizona-election-auditors-extend-lease-again-n1272948>

¹⁸ https://www.washingtonpost.com/politics/arizona-maricopa-county-audit-ballot-review/2021/07/01/3576eadc-d4f2-11eb-a53a-3b5450fdca7a_story.html

¹⁹ <https://www.azcentral.com/story/news/politics/arizona/2021/07/09/why-multiple-counts-maricopa-county-ballots-probably-not-match/7919653002/>

²⁰ <https://www.azcentral.com/story/news/politics/elections/2021/07/06/experts-question-results-expected-from-hand-count-in-arizona-senate-audit/7806286002/>

²¹ <https://www.azcentral.com/story/opinion/op-ed/laurieroberts/2021/07/13/auditors-ballot-count-doesnt-match-maricopa-county-tally-shocker/7956321002/>

²² <https://www.azcentral.com/story/news/politics/arizona/2021/07/23/ken-bennett-senate-liaison-blocked-arizona-election-audit/8058494002/>

²³ <https://www.azcentral.com/story/news/politics/arizona/2021/07/23/ken-bennett-senate-liaison-blocked-arizona-election-audit/8058494002/>

²⁴ <https://www.azcentral.com/story/news/politics/elections/2021/07/26/arizona-senate-bans-ken-bennett-election-audit-building/5380018001/>

The implications are clear: Our challenges have held the Senate and the Cyber Ninjas to account.

- Our first challenge proved that we could and would hold Senator Fann and the Ninjas to account.
- Using well-tested commercial equipment and assuming the Ninjas know which boxes to count and the high-speed paper count will match the count reported in the CVR.
- If the Senate ever releases the Ninja's hand count, the ballot count numbers, we suspect, will be substantially off – possibly greater than .5%, which would represent a ballot count difference of 10,477. Recall the statewide margin of Biden's victory was 10,457.
- It is evident that with the ballot counts substantially different from the official results, the Ninjas' vote counts would vary from the official count.
- Therefore, the Senate and the Ninjas must release box-level ballot counts and vote counts from the lazy Susan-based hand-count because the high-speed paper count cannot give any insight into the vote counts. Without that transparency, the high-speed paper count only muddies the water.

A realistic scenario:

Imagine how dangerous it would be if, after their six-month-long process, their report said, "We have found thousands of extra ballots that call into question the integrity of Maricopa County election administration. Since the County did not provide us with everything we asked for and refused to answer our questions, we ask that this matter be referred to the Arizona Attorney General."

Conclusion

Voters select winners and confer their legitimacy through the election processes. Without legitimate winners, democracy is in peril. We are three election experts who have come out of retirement to lend our expertise to use publicly available data to debunk allegations of election fraud based on little more than "concerns." We believe so-called "forensic audits" such as the one undertaken by the Arizona Senate undermine democracy by delaying and questioning the finality of the election and thereby cast doubt on the legitimacy of the winners to govern.

The work we have done is not trivial. It requires knowledge, skills, expertise, and experience, all related to election law, election system design and operation, election administration, and procedures. However, it is possible to use available public records and widely available data analysis tools to verify election results and dispel well-organized and extremely well-funded disinformation campaigns casting doubt on our elections and the legitimacy of our elected officials. Our country is well worth the effort required to do this work.

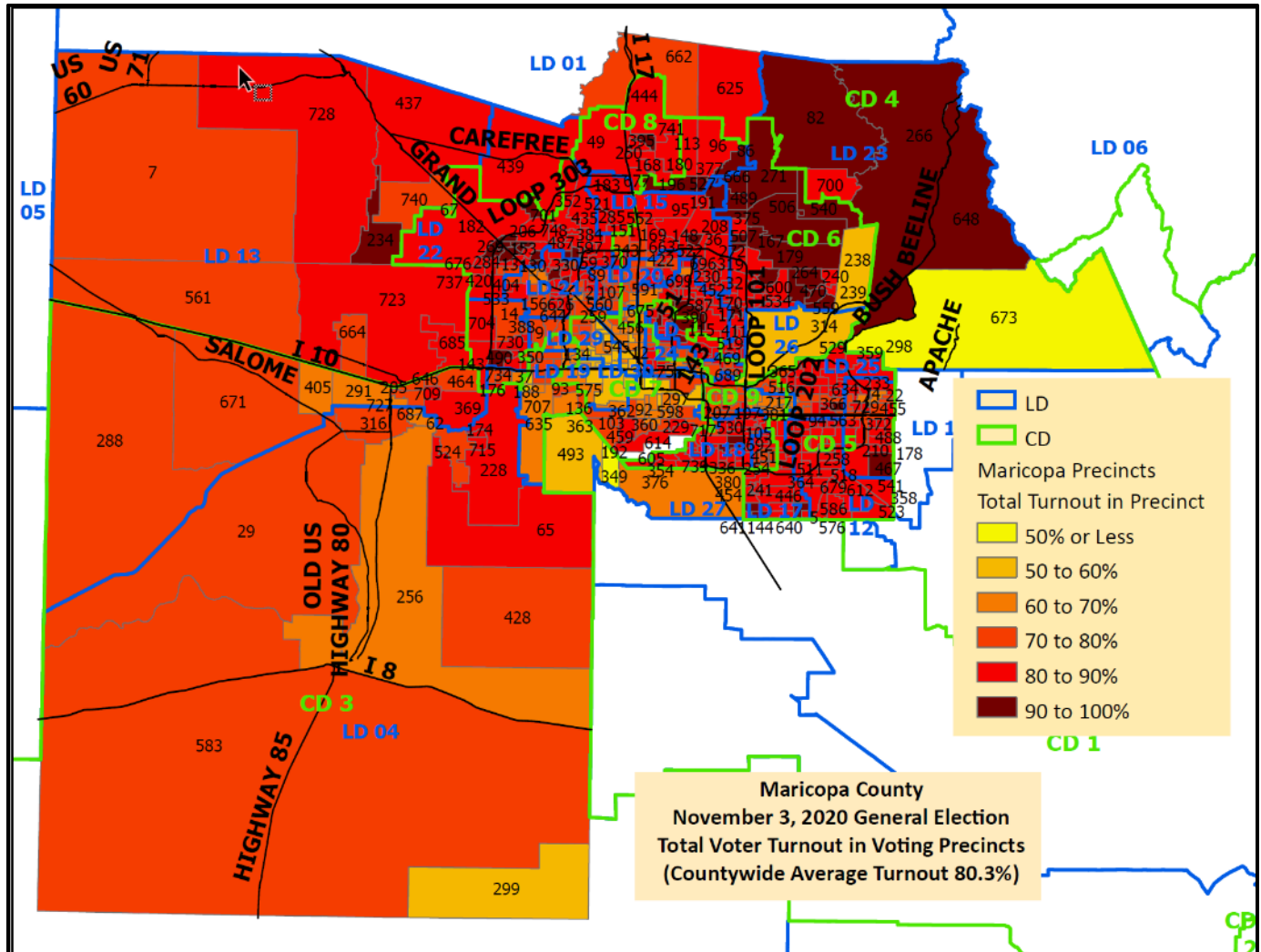
Our Team

1. Benny White has worked on election analysis for the past fourteen years on behalf of the Pima County Republican Party. White, who holds a law degree, is well-versed in Arizona election law and administrative procedures. He has participated in writing parts of the Arizona Election Procedures Manual. White has recently been reappointed to the Pima County Election Integrity Commission as representative for the County Administrator.
2. Larry Moore is the founder and retired Chief Executive Officer of the Clear Ballot Group, which pioneered independent audits of the primary voting system companies. Moore invented and patented the "visualization of voter intent," which has been used to build trust and achieve finality in over 200 election audits.
3. Tim Halvorsen is the retired Chief Technology Officer of the Clear Ballot Group. Halvorsen wrote the tabulation and audit software for the first *de novo* voting system to achieve federal certification in over a decade.

Combined, we have over 35 years of experience in elections and voting systems.

Appendix A: MAPS - Voter turnout by precinct and Disaffected Voters

This map shows that there were no anomalies in turnout. Had 40,000 ballots been “injected” into the count, there would be precincts with over 100% turnout. Of the 743 Maricopa County precincts, the turnout ranged from a low of 40% to a high of 100%. The extremely low and high turnouts were limited to a few precincts with a small number of registered voters. The average voter turnout was 80.3%, with Democratic voter turnout at 85.0% and Republican voter turnout at 87.6%.

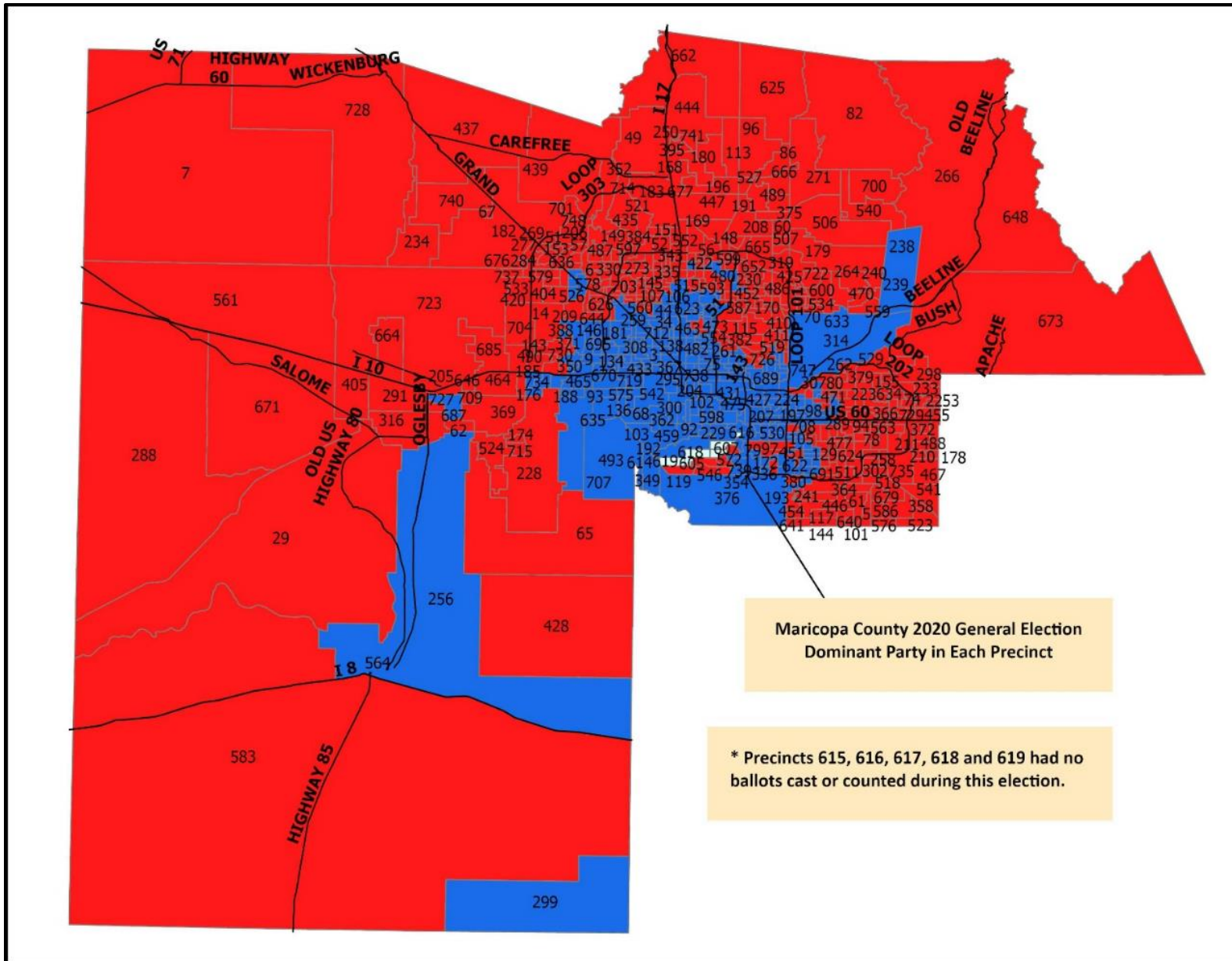


Map 1: Precinct-level turnout

The following maps demonstrate the political party demographics of Maricopa County and the distribution of disaffected voters throughout the county voter precincts. Metropolitan Phoenix lies at the heart of Maricopa County, and the precincts in that area typically have more Democratic Party registered voters than Republicans. Joe Biden won those precincts. The suburbs and outlying communities of the county, typically described as the East Valley and West Valley, see Republican pluralities in the voter precincts, and those precincts generally voted for Republican candidates but not always for Donald Trump.

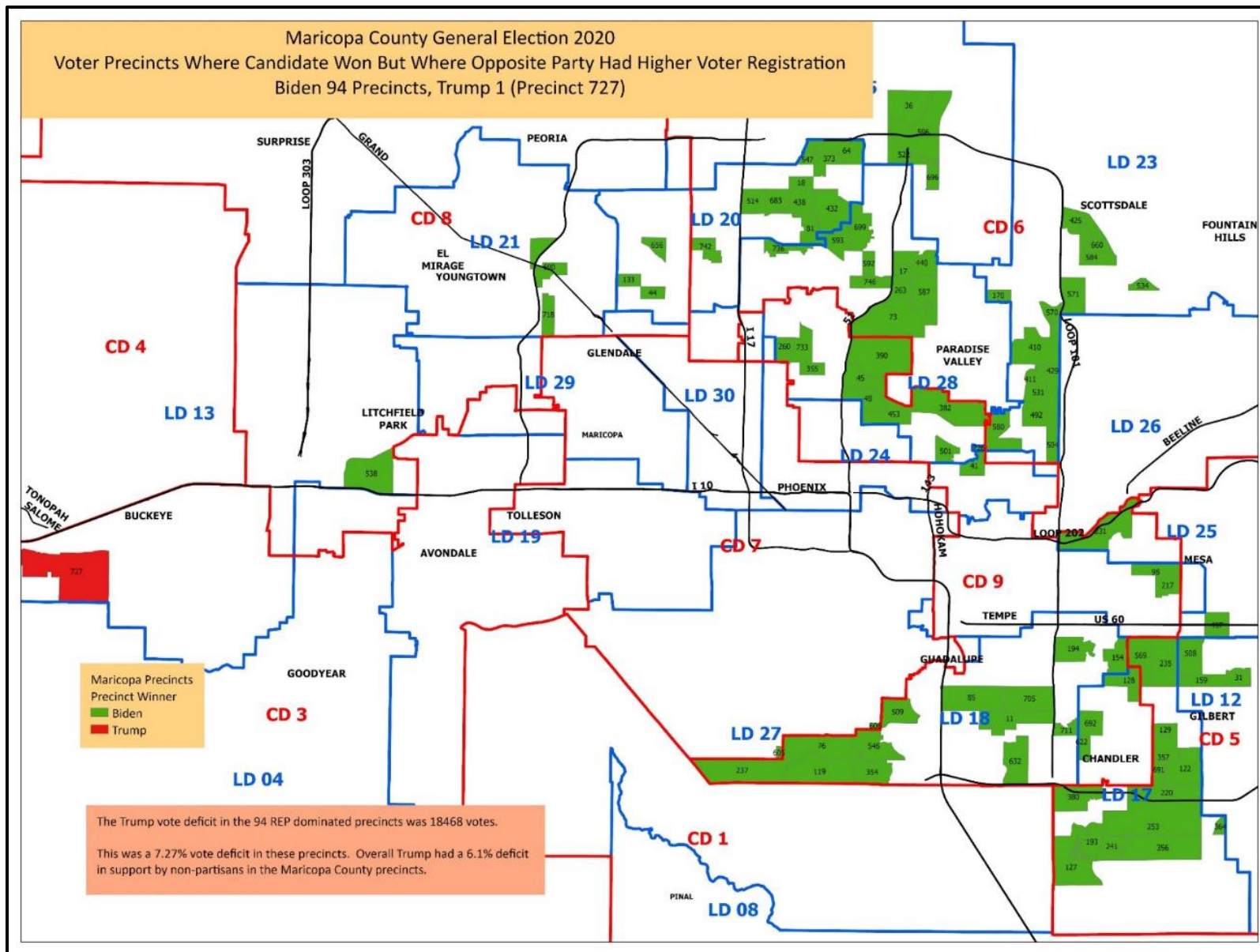
There was an exception to these general trends. A significant number of precincts where Republicans outnumbered Democrats but Joe Biden won the precinct. That is displayed in Map 3.

This map shows the voter registration demographics of precincts dominated by Republicans (red) and by Democrats (blue).



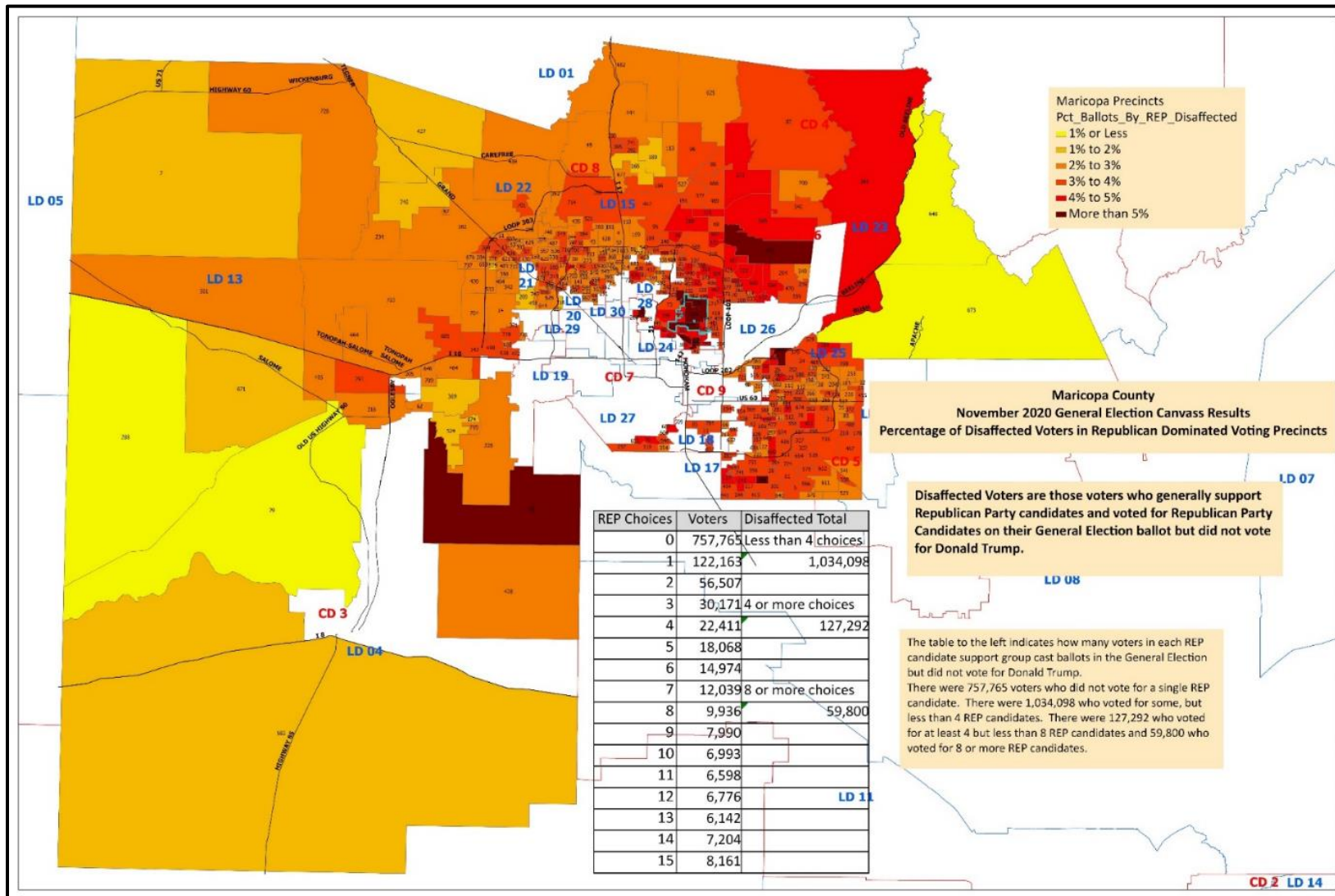
Map 2: Voter registration demographics

This map shows precincts where Republicans outnumbered Democrats but Joe Biden won the precinct despite a voter registration disadvantage.



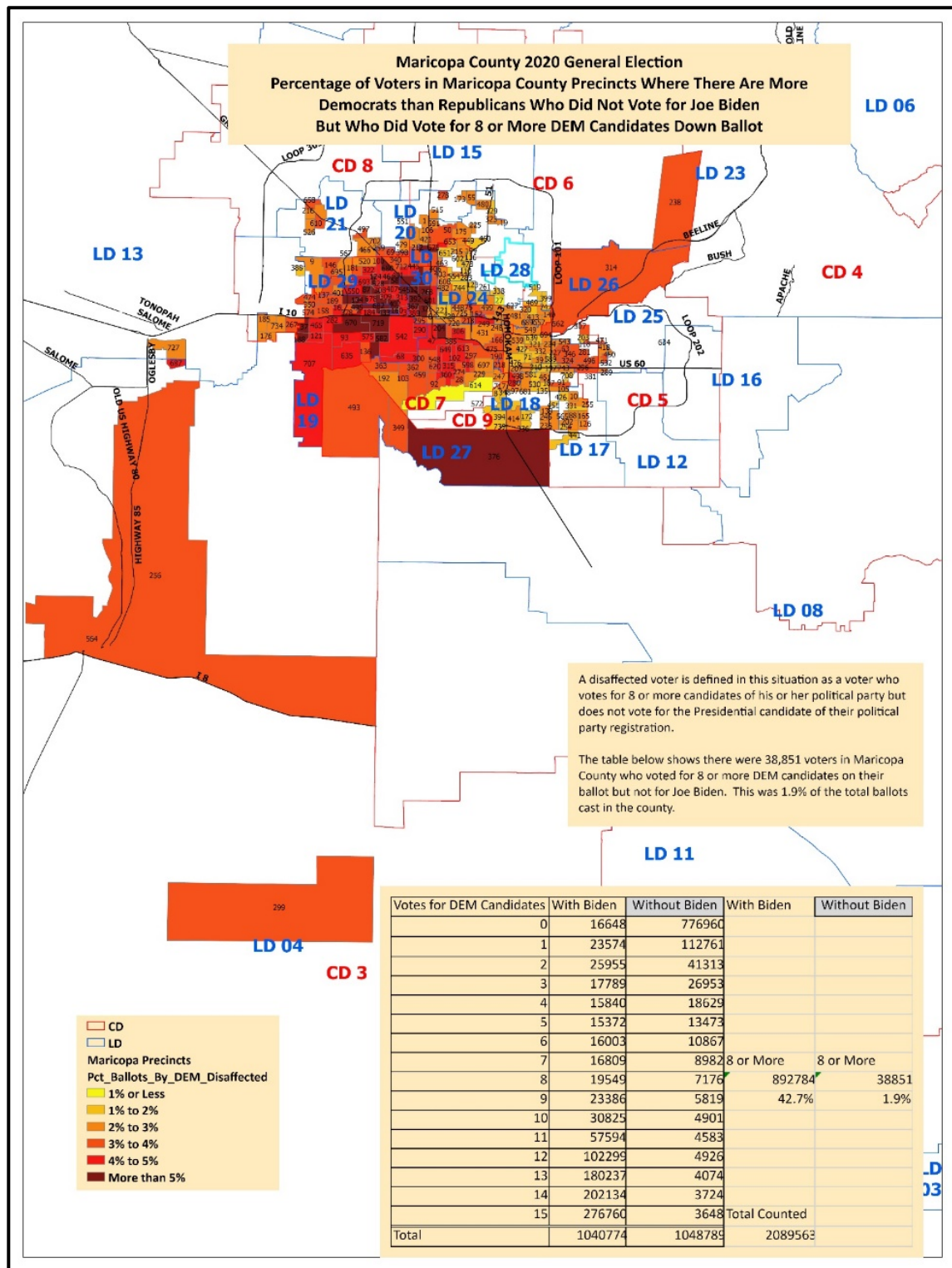
Map 3: Precincts where registered Republicans outnumbered registered Democrats, but Biden won the precinct

This map shows the level of disaffected Republican supportive voters in precincts where Republicans outnumber Democrats. Note that the level of disaffection reached 3% to 5% of the total ballots cast in a large number of precincts. Also note the distribution of disaffected voters throughout all precincts.



Map 4: Disaffected Republican supportive voters where registered Republicans outnumber registered Democrats

This map shows the dissatisfied Democratic supportive voters who did not vote for Joe Biden in the precincts where Democrats outnumber Republicans. Also note the distribution of dissatisfied voters throughout all precincts.



Map 5: Disaffected Democrats

Appendix B: Public Records

The definition of "public records" varies widely across states. For example, ballot images are public records in Florida but not in Arizona.

Our analysis included three types of semi-public or publicly available data:

1. Voter data:

- Maricopa County issues a "voted" file on the day the official canvass is released. This file includes a record for every ballot cast during the election and the voting method for each ballot. By comparing the "voted" file against the Voter Registration file, Mr. White could verify that voters who cast a ballot were registered to vote, which precincts those voters reside in, and the total number of ballots cast by these voters, along with the voting method used for each ballot. There was a match between these records and the ballots reported as counted. A "voted" file, unique in Arizona to Maricopa County, shows the names of voters who submitted a ballot in the current election. In Maricopa County, the "voted" file is made available at the same time as the official canvass. Other counties report voter activity as part of the Voter Registration files published quarterly.
- The Voter Registration file lists nearly every eligible voter's voter ID number, name, address, and voter history. Certain voters can have their identities withheld, including judges, police officers, and those whose anonymity is preserved under protective orders.
- Early Voting Records are published to the political parties daily in Maricopa and Pima County and weekly in other Arizona counties. These records show which voters have requested an Early Ballot and returned it either by mail or at an Early Voting site. Mr. White, a data analyst for the Arizona Republican Party, monitors these reports from all counties during the Early Voting period to make qualified voters are casting sure ballots and that all ballots are accounted for in the final results. He monitors ballot returns for the Pima County Republican Party daily. In Pima County, these ballots can be tracked through the administration process using additional public reports published by the County Recorder and Elections Department.

4. Ballot inventory reports

- Ballot Custody Transfer Manifest –The Maricopa County Elections Department generated this record during the transfer of election materials and equipment to the Arizona Senate. The Ballot Manifest included the pallet the boxes of ballots were on, the name/number of the box, and the EarlyVoting (EV) batches in the box. (See **Appendix E**)

5. Daily Ballot Summary (DBS) sheets – In Maricopa, the DBS sheets allowed us to connect the physical storage location of ballot batches to the CVR. The DBS sheets are a handwritten record generated by the tabulator operators in the Maricopa County Tabulation and Election Center (MCTEC) when they tabulate ballots.

6. Results:

- Canvass - The official public report of the vote counts for all races on the ballot.
- Cast Vote Record (CVR). The CVR is the basis of all election results. Every federally certified voting system creates a CVR; it is generally publicly available. (See **Appendix C**)

Appendix C: Cast Vote Record

Maricopa County 2020 General Election Cast Vote Record (selected rows / selected grouping columns)

Conceptually, the CVR is a spreadsheet where each row represents a ballot, each column represents a candidate or choice (in the case of ballot measures), and cells are 1's and 0's. Additional columns permit grouping votes into precincts and voting methods. In the 2020 Presidential Election, Maricopa had three voting methods: Election Day ballots, Early Voting Ballots, and Provisional ballots.

1	2	3	4	5	6	7	8
Row #	BallotID	BatchID	Counter Group	StyleID	Precinct	Tabulator	Canvassed
1	03001_00001_000070	03001_00001	EARLY VOTE	140	557	3001	0
2	03001_00001_000071	03001_00001	EARLY VOTE	2466	404	3001	0
3	03001_00001_000072	03001_00001	EARLY VOTE	967	270	3001	0
4	03001_00001_000073	03001_00001	EARLY VOTE	973	351	3001	1
5	03001_00001_000074	03001_00001	EARLY VOTE	138	77	3001	0
11	03001_00001_000130	03001_00001	EARLY VOTE	193	509	3001	1
12	03001_00001_000131	03001_00001	EARLY VOTE	138	77	3001	0
13	03001_00001_000132	03001_00001	EARLY VOTE	1068	228	3001	0
14	03001_00001_000133	03001_00001	EARLY VOTE	1994	490	3001	1
15	03001_00001_000134	03001_00001	EARLY VOTE	1805	748	3001	0
.....							
2089544	03002_00001_000070	03002_00001	EARLY VOTE	2713	684	3002	1
2089545	03002_00001_000071	03002_00001	EARLY VOTE	622	28	3002	1
2089546	03002_00001_000072	03002_00001	EARLY VOTE	2129	218	3002	0
2089547	03002_00001_000073	03002_00001	EARLY VOTE	1477	362	3002	0
2089548	03002_00001_000074	03002_00001	EARLY VOTE	461	696	3002	0
2089554	03002_00001_000140	03002_00001	EARLY VOTE	2979	723	3002	0
2089555	03002_00001_000141	03002_00001	EARLY VOTE	714	114	3002	0
2089556	03002_00001_000142	03002_00001	EARLY VOTE	392	276	3002	0
2089557	03002_00001_000143	03002_00001	EARLY VOTE	392	276	3002	0
2089558	03002_00001_000144	03002_00001	EARLY VOTE	140	555	3002	1
2089559	03002_00001_000145	03002_00001	EARLY VOTE	402	592	3002	0
2089560	03002_00001_000146	03002_00001	EARLY VOTE	962	420	3002	0
2089561	03002_00001_000147	03002_00001	EARLY VOTE	2466	404	3002	0
2089562	03002_00001_000148	03002_00001	EARLY VOTE	1039	62	3002	0
2089563	03002_00001_000149	03002_00001	EARLY VOTE	2974	685	3002	0

Notes:

- Column 2: BallotID is the unique 3-part BallotID is comprised of the TabulatorID, the BTC Code, (the BatchID), and a sequence number which corresponds to the name of the ballot image.
- Column 3: We used the BatchID to calculate the number of ballots by Box ID
- Column 4: Counter Group is another name for "Voting Method"
- Column 8: In this column "1s" designate ballots that have been electronically reviewed and adjusted to reflect voter intent.

Maricopa County 2020 General Election Cast Vote Record (selected rows / President)

1	2	8	9	10	11	12	13	14	15
---	---	---	---	----	----	----	----	----	----

Row #	BallotID	Canvassed	President						Canvass Change
			Trump	Biden	Jorgenson	Write-ins	Undervotes	Overvotes	
1	03001_00001_000070	0		1		0	0	0	
2	03001_00001_000071	0				0	1	0	
3	03001_00001_000072	0	1			0	0	0	
4	03001_00001_000073	1	1			0	0	0	
5	03001_00001_000074	0	1			0	0	0	
11	03001_00001_000130	1		1		0	0	0	
12	03001_00001_000131	0	1			0	0	0	
13	03001_00001_000132	0		1		0	0	0	
14	03001_00001_000133	1				0	0	1	
15	03001_00001_000134	0		1		0	0	0	
.....									
2089544	03002_00001_000070	1		1		0	0	0	
2089545	03002_00001_000071	1		1		0	0	0	Remove OV: Biden,Writein -> Biden
2089546	03002_00001_000072	0		1		0	0	0	
2089547	03002_00001_000073	0	1			0	0	0	
2089548	03002_00001_000074	0		1		0	0	0	
2089554	03002_00001_000140	0		1		0	0	0	
2089555	03002_00001_000141	0	1			0	0	0	
2089556	03002_00001_000142	0		1		0	0	0	
2089557	03002_00001_000143	0	1			0	0	0	
2089558	03002_00001_000144	1				1	0	0	Classify Write-in to Non-Qualified
2089559	03002_00001_000145	0	1			0	0	0	
2089560	03002_00001_000146	0		1		0	0	0	
2089561	03002_00001_000147	0		1		0	0	0	
2089562	03002_00001_000148	0		1		0	0	0	
2089563	03002_00001_000149	0		1		0	0	0	

Notes:

- Columns 9 – 11: “1s” represent votes.
- Column 12: Represents the number of marked ovals for a write-in.
- Column 13: In a “Vote for One” contest, an undervote is the same as a blank vote.
- Column 15: The Canvass Change is divided into three sections. For example, see row 2089545,
 - Action: Remove OV (i.e., remove overvote)
 - Affected candidates: Biden and Write-in
 - Resolution: The write-in mark was a hesitation mark, thus removing the over-vote condition and giving Biden the vote.

Appendix D: The Daily Ballot Summary Report (the "Blue Sheets")

The Daily Ballot Summary Report is the Maricopa County Election’s method of maintaining a ballot chain of custody from the time a ballot arrives in the mail through signature verification and tabulation. Ballots that pass signature verification are grouped into 200 ballot batches. An EV Batch number is assigned and then sent for tabulation – four digits for Early Voting, five digits for Election Day ballots. The EV Batch number are recorded on the Daily Ballot Summary handwritten sheets

A separate file is created for each day of tabulation. The following information is collected for each batch of ballots presented for tabulation including:

- Date of tabulation
- Tabulator operator
- EV Batch number
- Number of ballots pre-tabulation
- Tabulator code
- BTC Batch sequentially number*
- Number of ballots tabulated and accepted
- Number of ballots removed for manual duplication

* Automatically added to the Cast Vote Record

Tabulator Code	Primary Tabulator ID	Alternate Tabulator IDs			
C1	6001	6021			
C2	6002	6022	6032		
C3	6003	6023	6033		
C4	6004	6024	6034		
C5	6005	6025	6035		
H1	3001	3021	3031	4001	
H2	3002	3022	3032		
H3	3003	3023	3033	4003	5003
H4	3004	3024	3034		

Table 6: Alternate tabulator codes used to name CVR batches

Resolved: Issues with manual data entry.

Using the initial EV Batch number from the Ballot Custody Transfer Manifest we constructed a BatchID from the TabulatorID and BTC Batch number, e.g., 06003_00251. These BatchIDs are an intrinsic part of the CVR. Using them in a database query, we could ascertain the number of ballots counted for every batch and the votes for all 277 races included on the various styles of ballots used in the election.

We encountered clerical errors common to any manual data entry process. The Ballot CustodyTransfer Manifest had been hand-entered into a spreadsheet to ensure compliance with the subpoena; it was only available in printed form and therefore had to be OCRed. To test the accuracy of our corrections, we developed a “Validation Suite” – a program to detect inconsistencies between the Manifest and the Blue Sheets. Shown below is the final run of the Validation Suite.

Validation Suite as of July 18, 2021
<ol style="list-style-type: none"> 1. Ballot Manifest: 10341 unique batches, 1634 unique boxes, 0 duplicates found. 2. Daily Summary: 9995 unique batches, 1923728 ballots, 0 duplicates found. 3. Batch 5729 in Daily Summary reference row 5779 has an arithmetic error: EVCount (199) <> TotalBallots (201) + Dupes (0) (Note: Dupes would have to be -2, which is not possible) 4. Distinct batch names in Manifest (10341) matches Daily Summary plus Vote Centers (10341) 5. Manifest batch names not found in Daily Summary or Vote Center batches (0): 6. Daily Summary batch names not found in Manifest (0): 7. CVR Vote Center BatchIDs not found in Manifest (0): 8. Distinct BatchIDs in Daily Summary and Vote Centers (10341) matches CVR BatchIDs (10341) 9. CVR BatchIDs not found in Daily Summary (0): 10. Daily Summary + Vote Center BatchIDs not found in CVR (0):

The ballot counts from the early voting batches and provisional batches matched the official results perfectly. We were not able to cross-check our assignments of the Election Day batches into boxes because the "Blue Sheets" only recorded centrally counted batches; Election Day ballots were tabulated by precinct scanners.

Procedure to connect a Box ID to ballot-level records in the Cast Vote Record

Maricopa County November 2020 General Election
Ballot Custody Transfer Manifest

Ballot #	Box # (Ballot Type, Machine, Date)	First Batch	Batches
1	EVH3/11-4/8267	✓	8267, 8289, 8266, 8221, 8193, 8194
1	EVH3/11-4/8267	✓	8287, 8197, 8336, 8198, 8240, 8236

Select a Box
EVH3/11-4/8267

Lookup DBS by Date
11-4 (November 4)

Find EV Batch on DBS
8267

Page 1 of the Ballot Custody Transfer Manifest

Operator: Alba **MARICOPA COUNTY ELECTIONS DEPARTMENT** Date: 11/4 Nov
Starting #: 41203 Page 1 of 2

GENERAL ELECTION NOVEMBER 3, 2020	EV BATCH #	EV COUNT	BTC BATCH #	TOTAL BALLOTS	TO DUPE
1377	8316	200	214	200	
	8295	197	215	197	
	8100	200	216	200	
	8100	199	217	199	
	8103	102	218	102	
	8267	198	253	198	
	8209	199	254	199	
	8194	200	255	200	
	8266	197	256	197	
	8221	195	257	195	
	8193	199	258	199	
	8336	199	259	199	
	8198	197	260	197	
	8336	200	261	200	
	8198	199	262	199	
TOTALS FOR THIS PAGE:				9,572	53

H1 H2 **H3** H4 C1 C2 C3 C4 C5 TOTAL BALLOTS: 51,372

Note Tabulator Code
H3

Note BTC Batch #
253

Note EV Count
198

Source: **11042020_DailyBallotSummary.pdf** (page 6 of 10)

Maricopa County Elections Department
Daily Ballot Summary Report ("Blue Sheets") - Machine-Readable
Box: EVH3/11-4/8267

SourceDoc	Source Page	Tabulator Code	Tabulator ID	EV Batch	EV Count	BTC Batch	Total Ballots	Sent for Duplication
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8267	198	253	198	
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8289	199	254	199	
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8194	200	255	200	
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8266	197	256	197	
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8221	195	257	195	
11042020_DailyBallotSummary.pdf	6 of 10	H3	3033	8193	199	258	199	
1,188						1,188	0	

Determine Tabulator Code
3033

[See Tabulator
_Batch_Correlation.xlsx in
Appendix I – Key Docu-
ments]

Machine readable version of the Daily Ballot Summary Sheet

CVR Extract - BatchID 03033_00253 (partial listing)

#	BallotID	BatchID	CVR Batch Number	Counter GroupID	Precinct ID	Ballot StyleID	Tabulator ID	Tabulator Code	Canvass	Remade_Reason_1 (Presidential Race)
1	03033_00253_000001	03033_00253	253	Early	444	934	H3	3033	0	
2	03033_00253_000002	03033_00253	253	Early	677	2963	H3	3033	0	
3	03033_00253_000003	03033_00253	253	Early	292	1905	H3	3033	0	
186	03033_00253_000186	03033_00253	253	Early	439	2621	H3	3033	1	Write-in assigned: 600 -> 800
198	03033_00253_000198	03033_00253	253	Early	210	1942	H3	3033	0	

Confirm # ballots
198

Appendix E: Ballot Custody Transfer Manifest

The subpoenaed ballots were delivered to the Ninjas in cardboard boxes on pallets; each box contained batches of approximately 200 ballots. Maricopa Elections created the "Ballot Custody Transfer Manifest" [Ballot Manifest] to account for the storage boxes and batches of ballots delivered to the Senate. Ken Bennett, liaison for the Senate, carefully checked and accepted this document.

This Manifest listed the following information for 1,634 boxes of ballots delivered on 46 pallets.

- The pallet containing the box,
- A Box Name consisting of the type of ballot, called a voting method (early, Election Day, or provisional), the tabulator code, the date of the tabulation, and an identifier for the first batch in the box.
- A listing of the batches in the box. A batch is a grouping of approximately 200 ballots used by the Elections Department to maintain ballot control from ballot receipt to tabulation.

An example from the first row on the first page of the Ballot Manifest is Box number: EVH3/11-4/8267.

- "EV" is early voting,
- "H3" is the ID for one of four high-speed tabulators,
- "11-4" is November 3, and
- "8267" is the first of six batches (8267, 8269, 8266, 8221, 8193, 8194). These are called EV Batches

To compare the Ninja's hand-count to the storage boxes, we had to create the ballot count and vote counts by storage box. Our team had to link the "EV Batch" numbers on the Ballot Manifest to the Cast Vote Record (CVR), the official record of election results.

Ballot control procedures begin when mail-in ballots arrive in the processing center of Runbeck Elections. The Maricopa Election Department subcontracts receipt of mail ballots and the initial automated signature verification check. Runbeck assigned the EV Batch numbers, which follow the batches until they are archived. These boxes contained multiple batches of approximately 200 ballots, delivered to the Arizona Senate's custody to comply with their subpoena.

It was difficult to determine the batches in Election Day boxes. That is because, unlike boxes containing Early Voting and Provisional ballots, there was no cross-reference between the Daily Ballot Summary sheets and the Ballot Custody Transfer Manifest. If we can participate in a comparative audit, it will be simple to look at the box label see which batches are included. These variations and the basis for our estimates of which batches are probably included in the Election Day ballot boxes are described in a separate document which will be available to the public once the Senate releases their report of the "forensic audit".²⁵

²⁵ [Interpretation of Election Day Ballot Boxes Batch Contents](#)

Extract of Ballot Custody Transfer Manifest (Page 1 of 50)

Maricopa County November 2020 General Election

Ballot Custody Transfer Manifest

Arizona Senate Fifty-Fifth Arizona Legislature / First Regular Session Subpoena Duces Tecum

Karen Fann, President of the Arizona Senate / Warren Petersen, Chairman of Senate Judiciary Committee

Transfer Date: 3/1/2021

Total Boxes 40

Observed by: [Signature] Glanda Rhoads

Pallet #	Box # (Ballot Type, Machine, Date, First Batch)	Batches
1	EVH3/11-4/8267	8267, 8289, 8266, 8221, 8193, 8194
1	EVH3/11-4/8287	8287, 8197, 8336, 8198, 8240, 8236
1	EVH3/11-4 & 11-5/8230	8230, 8405, 8584, 8414, 8419, 8477
1	EVH3/11-05/8526	8526, 8407, 8445, 8383, 8408, 8418
1	EVH3/11-02/7801	7801, 7862, 7888, 7832, 7835, 7944
1	EVH3/11-04/8326	8326, 8355, 8196, 8254, 8339, 8280
1	EVH4/11-04/8265	8265, 8244, 8250, 8220, 8226, 8302
1	EVH3/11-03/7965	7965, 8033, 8156, 8138, 8172, 8066
1	EVH3/11-03/8043	8043, 8021, 7936, 8148, 8146, 7988

[Signature] 4/22/2021 Ken Blumett

Page 1 of 50

CN

Extract of Ballot Custody Transfer Manifest – Machine readable format

Maricopa County November 2020 General Election
Ballot Custody Transfer Manifest (machine-readable)

Pallet	Box	Batches
1	EVH3/11-4/8267	8267, 8289, 8266, 8221, 8193, 8194
1	EVH3/11-4/8287	8287, 8197, 8336, 8198, 8240, 8236
1	EVH3/11-4 & 11-5/8230	8230, 8405, 8584, 8414, 8419, 8477
1	EVH3/11-05/8526	8526, 8407, 8445, 8383, 8408, 8418
1	EVH3/11-03 & 11-04/8015	8015, 8316, 8095, 8109, 8102, 8100, 8103
1	EVH3/11-04/8105	8105, 8239, 7618, 8049, 8094, 8104, 8131
1	EVH3/11-04/8097	8097, 8136, 8091, 8343, 8272, 8345, 8337
1	EVH3/11-02/7750	7750, 8221, 7788, 7949, 7755, 7750, 7750
1	EVH3/11-02/7644	7644, 7792, 7763, 7786, 7707, 7766, 7807
1	EVH3/11-02/7801	7801, 7862, 7888, 7832, 7835, 7944
1	EVH3/11-04/8326	8326, 8355, 8196, 8354A, 8339, 8380
1	EVH4/11-04/8265	8265, 8244, 8250, 8220, 8226, 8222, 8302
1	EVH3/11-03/8137	8137, 8012, 7923, 8129, 8158, 8163, 8122
1	EVH3/11-03/8126	8126, 8021, 7936, 8148, 8146, 7988
1	EVH3/11-02/7659	7659, 7648, 7658, 7708, 7674, 7764, 7654
1	EVH3/11-03/7965	7965, 8033, 8156, 8138, 8172, 8066
1	EVH3/11-03/8043	8043, 8021, 7936, 8148, 8146, 7988

Denotes correction made to resolve a duplicate entry

Corresponds to Page 1 of 50

Appendix F: From a box label to its ballot and vote counts.

Below is the process to go from a box label to the ballot and vote counts. Since neither document was in machine-readable form, we prepared spreadsheets of the Ballot Custody Transfer Manifest and the Daily Ballot Summary sheets. We established a link between a box label and the CVR with the machine-readable versions of these two documents. Here is the process one would follow in a public setting:

1. Select a Box. From the box label, note:
 - a. Box Name: EVH3/11-02/7644 (Note: 7644 is the first EV batch in the box)
 - b. EV batches contained in this box: 7644, 7792, 7763, 7786, 7707, 7766, 7807.
2. In the Batch Summary ²⁶report, filter on BoxName column with the code 7644; (see tables below).

Maricopa Senate "Audit" Batch Summary Report						Presidential Race					
Pallet	BoxName	Counter Goup	CVR_BatchID	CVR_ballots	EV_Batch	Pres_Trump	Pres_Biden	Pres_Jorgenson	Pres_W	Pres_UV	Pres_OV
1	EVH3/11-02/7644	EV	03033_00160	200	7644	132	66	2	0	0	0
1	EVH3/11-02/7644	EV	03033_00161	115	7792	89	24	2	0	0	0
1	EVH3/11-02/7644	EV	03033_00162	140	7763	91	45	3	1	0	0
1	EVH3/11-02/7644	EV	03033_00166	188	7786	118	64	4	1	0	1
1	EVH3/11-02/7644	EV	03033_00163	200	7707	45	149	3	0	3	0
1	EVH3/11-02/7644	EV	03033_00164	194	7766	144	47	2	1	0	0
1	EVH3/11-02/7644	EV	03033_00165	200	7807	149	50	0	0	1	0
Totals				1,237		768	445	16	3	4	1
Source: Batch Summary Report for Box EVH3/11-02/7644						1,237	= Ballot count = sum of votes, under and overvotes				

Maricopa Senate "Audit" Batch Summary Report						U.S. Senate Race				
Pallet	BoxName	Counter Goup	CVR_BatchID	CVR_ballots	EV_Batch	Sen_McSally	Sen_Kelly	Sen_W	Sen_UV	Sen_OV
1	EVH3/11-02/7644	EV	03033_00160	200	7644	128	66	0	6	0
1	EVH3/11-02/7644	EV	03033_00161	115	7792	86	25	0	4	0
1	EVH3/11-02/7644	EV	03033_00162	140	7763	93	42	1	4	0
1	EVH3/11-02/7644	EV	03033_00166	188	7786	118	66	2	2	0
1	EVH3/11-02/7644	EV	03033_00163	200	7707	48	147	0	4	1
1	EVH3/11-02/7644	EV	03033_00164	194	7766	137	50	0	7	0
1	EVH3/11-02/7644	EV	03033_00165	200	7807	143	53	1	3	0
Totals				1,237		753	449	4	30	1
Source: Batch Summary Report for Box EVH3/11-02/7644						1,237	= Ballot count = sum of votes, under and overvotes			

3. Compare the CVR ballot count (1,237) to the ballot count created from the Ninja's hand count or the ballot count from the high-speed ballot-counting machines. If chain of custody was preserved and the ballots were returned to the same box during the hand-count, the ballot count should match perfectly. Had the batches been preserved, the vote totals for each batch should also match perfectly.

²⁶ <https://www.scribd.com/document/517201824/BatchSummary-July23>

Appendix G: Many points of comparison – the key to a credible audit

When there are many independently created points of comparison, audits generate more confidence and have more forensic power (i.e., discovering and isolating discrepancies quickly).

The table below shows how points of comparison are computed for the Presidential and U.S. Senate races. Without the ability to produce totals at the box level, the Ninjas can only produce a maximum of 15 points of comparison. If they could not correctly determine the ballots belonging to a voting method (see Appendix C), there would only be 5 points of comparison – one for each candidate. Ideally, if the batch-level detail had been preserved, there would have been 31,023 points of ballot comparison and 155,115 points of vote comparisons.

A	B		C		D		E		F	G
Level of Detail	# Voting Methods*		No detail # Boxes # Batches		# BALLOT comparisons		# Candidates (3 in Pres; 2 in U.S. Senator)		#VOTE Comparisons	Confidence in Audit results
Totals only	3	X	1	=	3	X	5	=	15	Very Low
By Box			1,634		4,902				24,510	High
By Batch			10,341		31,023				155,115	Very High

Table 7 Points of Comparison

* The three voting methods are Early, Polling and Provisional.

Appendix H: Key Documents

Arizona State

1. Electronic Adjudication – procedures at the tabulation center
<https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/16/00621.htm>
2. Elections Procedures Manual
https://azsos.gov/sites/default/files/2019_ELECTIONS_PROCEDURES_MANUAL_APPROVED.pdf
3. State Canvass
https://azsos.gov/sites/default/files/2020_General_State_Canvass.pdf

Maricopa & Pima County

4. Maricopa County Voting Plan - 2020 General Election
https://recorder.maricopa.gov/pdf/GENERAL%20ELECTION%202020_Early%20Voting%20Plan_FINAL.pdf

Canvass

5. Maricopa:
<https://recorder.maricopa.gov/pdf/11-03-2020-0%20Canvass%20BOS%20SUMMARY%20NOV2020-two-sided%20print.pdf>
6. Pima:
https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/elections/Election%20Results/General%202020%20Results.pdf

Legal Proceedings

7. Litigation in cases concerning the Maricopa County election audit
<https://www.clerkofcourt.maricopa.gov/records/election-2020>
8. CV2021-002092, Maricopa County et al v. Fann et al
<https://www.clerkofcourt.maricopa.gov/records/election-2020/cv2021-002092>
9. Senate contract with Cyber Ninjas, Inc. (pg 8 Master Services Agreement; pg 31 Statement of Work)
<https://www.clerkofcourt.maricopa.gov/home/showpublisheddocument/2555/637551085566170000>
10. Ninja Statement of Work
<https://www.clerkofcourt.maricopa.gov/home/showpublisheddocument/2557/637551085573500000>

Analysis Products

11. Batch Summary Report (Private)
https://www.scribd.com/document/517201824/BatchSummary-July23?secret_password=eOR1piTdlrEE-BMrILpZ7
12. Box Summary Report (Private)
https://www.scribd.com/document/518277416/BoxSummary-July23?secret_password=QSjE24Frsl9JKam-sfcsd
13. Tabulator_Batch Correlations
<https://www.scribd.com/document/517142375/Published-Batch-Tabulator-Correlation-Document>
14. Daily Ballot Summary sheets (machine readable)
<https://www.scribd.com/document/517142048/Machine-Readable-Daily-Summary-Sheets>
15. Ballot Custody Transfer Manifest (machine readable)
<https://www.scribd.com/document/517549023/Machine-Readable-Ballot-Manifest>
16. Interpretation of Election Day Ballot Boxes Batch Contents (Private)
https://www.scribd.com/document/518001156/Interpretation-of-Ballot-Manifest-for-Election-Day-Ballot-Boxes?secret_password=PkdAITvyUypGozQHYWbr

Critical Reviews: Two reports provide background information on the Arizona Senate Election Review

- The first, published by the States United Democracy Center, is entitled "[Report on the Cyber Ninjas Review of the 2020 Presidential and U.S. Senatorial Elections in Maricopa County, Arizona](#)." It is a critique of the audit methods employed by the Arizona Senate's prime contractors, the Cyber Ninjas.
- The second report, published by The Century Foundation, provides a detailed chronology of the Arizona Senate Audit from Election Day through June 2021. It is entitled, "[How the Arizona Senate Audit in Maricopa County Is an Assault on Voting Rights: A Comprehensive Chronology of the 2020 Arizona Election Process and State Senate Audit](#)."

Appendix I: Media Coverage of Our Analysis

Date	Source	Link
2021-05-24	Daily Kos	<u>Arizona Analysis Shows That Many Republicans Did Not Vote for Trump in 2020</u>
2021-06-10	AZCentral	<u>Election experts offer challenge to Cyber Ninjas: We can count ballots without opening boxes</u>
2021-06-12	AZCentral	<u>Senate President Fann not responding to recount challenge from election experts</u>
2021-06-12	ABC News	<u>Republican election analyst challenges AZ audit to compare its findings with his</u>
2021-06-13	National Memo	<u>Tensions Flare Among Arizona Republicans Over Discredited 'Fraudit'</u>
2021-06-13	Truthout.org	<u>Seasoned Auditors Challenge Arizona Senate to Let Them Confirm 2020 Results</u>
2021-06-16	ABC15 1 of 3	<u>The other Arizona election audit: Disaffected Republicans handed Arizona to Joe Biden</u>
2021-06-17	ABC15 2 of 3	<u>Public data traces Biden-only and Trump-only ballots in 2020 Arizona election</u>
2021-06-18	ABC15 3 of 3	<u>What's ballot adjudication and how does it affect Arizona's election audit?</u>
2021-06-17	Washington Examiner	<u>Arizona election analysis finds GOP voters disenchanted with Trump helped Biden win</u>
2021-07-13	AZMirror	<u>Fann says audit team, Maricopa County have different ballot totals</u>
2021-07-23	AZMirror	<u>Damage done: Audit leader's testimony sets off nationwide wave of misinformation</u>
2021-07-23	AZCentral	<u>Senate liaison Ken Bennett blocked from entering Arizona election audit as tension with contractors boils over</u>
2021-07-27	CBS News	<u>Arizona Senate liaison to ballot audit raises transparency concerns, threatens to quit</u>
2021-07-27	AZ Republic	<u>Ken Bennett worries the Senate auditors could be cooking the numbers. Gee, ya think?</u>
2021-07-27	Daily Independent	<u>Bennett locked out as Maricopa County audit liaison</u>
2021-07-28	Washington Post	<u>Arizona's GOP-backed ballot review has raised nearly \$5.7 million in private donations, organizers say</u>
2021-08-03	Arizona Republic	<u>If legitimacy is what Fann's after, release audit findings now</u>