

**Evaluation of Supervisor Kevin Cavanaugh's "Report of
Obvious Errors in the 2024 Primary Election"**

Prepared for
The Pinal County Board of Supervisors
By
Snell & Wilmer LLP

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Snell & Wilmer

MEMORANDUM

TO: Pinal County Board of Supervisors
FROM: Snell & Wilmer, LLP
DATE: October 8, 2024
RE: Evaluation of Supervisor Cavanaugh’s “Report of Obvious Errors in the 2024 Primary Election.”

Supervisors Goodman, Miller, McClure, and Serdy,¹

Snell & Wilmer presents its Evaluation of Supervisor Cavanaugh’s “Report of Obvious Errors in the 2024 Primary Election” (the “Report”), as well as the underlying work papers associated with that Report.² As explained in more detail below, we did not find any evidence supporting Supervisor Cavanaugh’s claims that during the July 2024 Primary Election: (1) the distribution between in-person and early voting totals in Pinal County was “abnormal”; (2) that a person “manipulated” the final vote tallies; or (3) that vote totals were released to the public before polls closed on Election Day. It is our opinion that the July 2024 Primary Election in Pinal County was free of fraud, manipulation, or any other issue that would call its results into question.

Our Evaluation is based on in-depth interviews with County Recorder Dana Lewis and her staff; original County documents related to the voting system, L&A tests, poll worker training, and other matters; a personal on-site visit to the Pinal County VOTES center on September 11-12, 2024; the results of a technical analysis conducted on the County’s tabulation machines, servers, and “ToolBox” laptops; the results of an investigation conducted into the County’s elections procedures; and a review of Supervisor Cavanaugh’s statistical analysis. This Evaluation is supported by the reports of Dr. Sean Trende, Ryan Macias of RSM Election Solutions LLC, and Michael Walker for Pro V&V, Inc. The attached Appendix contains all relevant documents.

This Evaluation has three Sections. Section 1 details the factual background of the County, the 2024 Primary Election, Cavanaugh’s Report, and the September 11-12 on-site technical assessment of the County’s voting machines. Section 2 evaluates each specific claim made by Cavanaugh. Section 3 is a brief conclusion.

¹ Supervisor Cavanaugh has recused himself from this matter.

² This Evaluation is for the Pinal County Board of Supervisors only. It is not intended to serve as legal advice or opinion to third-parties and does not create an attorney-client relationship with any party other than Pinal County. To the extent that third-parties attempt to rely on the statements in this Evaluation in any form, that reliance or attempted reliance would be unwarranted and unreasonable. This firm is not responsible for the consequences of such actions. If Pinal County provides this Evaluation to third-parties, that is not intended to be, and does not constitute, a waiver of Pinal County’s attorney-client privilege with respect to the analysis underlying this Evaluation.

SECTION 1: FACTUAL BACKGROUND

I. General Background on Pinal County Elections

A. Demographics

Pinal County is located between Maricopa County, Gila County, Pima County, and Graham County. The County is rapidly growing: its population has increased from approximately 380,018 in 2011 to approximately 467,459 in 2023.³ From around 2017 to 2023, the County’s population has consistently grown at about two to three percent per year.⁴ It is currently the third largest county in Arizona.⁵

Accordingly, the number of registered voters in the County has substantially increased. During the 2016 General Election, there were 189,462 registered voters in Pinal County.⁶ This number grew to 202,079 registered voters during the 2018 General Election; 248,874 during the 2020 General Election; 262,694 during the 2022 General Election; and 268,139 during the 2024 Primary Election.⁷ Over this period of time, the County’s registered voters have become substantially more Republican: in 2016, there were 65,453 registered GOP (34.55%) voters versus 51,049 Democrat voters (26.94%) and 71,204 “others”⁸ (37.58%); in 2024 there were 62,073 Democratic voters (23.25%); 104,200 GOP (38.86%); and 97,426 “others” (36.33%).⁹

As the County’s registered voter population grew, so did the number of ballots cast in County — from the 2014 midterms to the 2022 General Election the number of total ballots cast nearly doubled (from around 73,000 to 146,000).

B. Creation of the Pinal County VOTES Center

The recent population increase stressed the County’s then-existing elections administration infrastructure, in response the County authorized a new, state-of-the-art, \$29 million, 53,000 square-foot elections center in Florence, Arizona.¹⁰ This facility was completed on June 11, 2024, and was in use for the July 2024 Primary Election.¹¹ It is formally known as the Pinal County “Voter Operations Technology and Election Services” (“VOTES”) center and is located at 320 W. Adamsville Road, Florence, Arizona.

³ Pinal County, *Population*, <https://www.pinal.gov/1297/Population> (last accessed Oct. 6, 2024).

⁴ *Id.*

⁵ Ariz. Office Econ. Opp. *July 1, 2023 Population Estimates for Arizona’s Counties*, https://oeo.az.gov/sites/default/files/data/popest/pop-est-az-2023_07_01.pdf (last accessed Oct. 6, 2024)

⁶ APP’XDOC 8 at 1.

⁷ APP’XDOC 9 at 1; APP’XDOC 10 at 1; APP’XDOC 11 at 1; APP’XDOC 12 at .

⁸ “Others” includes Independents but does not include Libertarian or Green Party members.

⁹ Compare APP’XDOC 8 at 1 with APP’XDOC 12 at 1.

¹⁰ Pinal County, Press Release, *Pinal County Opens New Pinal VOTES Election Center in Florence* (June 11, 2024) <https://www.votebeat.org/arizona/2023/6/15/23762434/pinal-county-arizona-election-security-ballot-counting/> (last accessed Oct. 6, 2024).

¹¹ *Id.*

C. County Elections Equipment

The County owns and operates two “Election Management System Servers” (“EMS Servers”) with EMS “client” devices (“EMS Clients”); two “Toolbox” laptops, and five tabulation machines.¹²

1. EMS Server-Client Device

The County owns and operates the Election Systems and Software (ES&S) EVS 6.3.0.0 voting system.¹³ The United States Election Assistance Commission (“EAC”) certified the EVS 6.3.0.0 for federal use on November 17, 2022.¹⁴ The Arizona Secretary of State certified the EVS 6.3.0.0 on May 25, 2023.¹⁵ The County’s specific EVS 6.3.0.0 uses a server-client configuration, which means that the user works off a “client” computer, but accesses data stored on a server.¹⁶ The purpose of an EMS Server is to design, develop and maintain election databases, perform election definition and setup functions, format ballots, count votes, consolidate and report results, and maintain audit trails.¹⁷

The County’s client-server configuration is comprised of two Dell PowerEdge T430 EMS Servers with Dell OptiPlex 5050 EMS Workstations.¹⁸ The first T430 EMS Server and 5050 EMS Workstation is located in the tabulation room of the VOTES center, which is under 24/7 video surveillance and subject to other security measures discussed in more detail below.¹⁹ Consistent with best practices, the second EMS Server and 5050 EMS Workstation is located in a confidential secure offsite location.²⁰ The purpose of the second server is purely redundancy: after the election, data from the first EMS server is loaded into the second server in case something happens to the first server.²¹

2. Toolbox Laptops

The County also owns two Dell Latitude 540 laptops that run the EVS 6.3.0.0. Toolbox software (the “ToolBox Laptops”).²² Practically speaking, however, only one of these ToolBox Laptops is relevant to this report, as one of the County’s two ToolBox Laptops has never been opened.²³ In conjunction with Ryan Macias and Pro V&V, we personally observed that this second

¹² Pinal County also has ExpressVote ballot marking devices. *See* APP’XDOC 6 at 12. Supervisors Cavanaugh’s Report does not make any allegations relating to the ExpressVote machines, and therefore they were not included within this review.

¹³ APP’XDOC 6 at 6.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.* at 6-7.

¹⁸ *Id.* at 6.

¹⁹ *Id.* at 10-12.

²⁰ *Id.* at 6.

²¹ *See id.*

²² *Id.* at 7; APP’XDOC 13 at 1-2.

²³ APP’XDOC 6 at 8.

ToolBox Laptop is still in its original packaging from ES&S, locked in a security cage, and sealed with its original tamper-evident tape seal during the September 11 and 12, 2024, site-inspection.²⁴

The County's sole opened ToolBox Laptop is not used to run tabulators.²⁵ Rather, the purpose of the EVS 6.3.0.0. ToolBox software is to "enhance the software usability experience and streamline various processes" of the EMS system.²⁶ For instance, the EVS 6.3.0.0 ToolBox Software has add-ons like Test Deck (an add on that allows elections officials to test machines prior to an election), Text to Speech (an add on that makes it more simple to create an audio ballot), and Media Restore (an add on that prepares USB flash drives to be used in elections machines by securely clearing all data on the USB and then restoring the USB to a FAT32 format).²⁷

The County's sole utilized ToolBox Laptop has never been connected to the internet.²⁸ Although it, like all laptops, has the *capability* to connect to the internet, elections staff ensure that this Laptop is always in "airplane mode."²⁹ Even if the ToolBox Laptop were somehow connected to the internet, it could not be used to alter the results in the tabulation machines, server, or "client" devices because, again, this Laptop is never connected to those devices.

3. Tabulators

The County owns and operates five ES&S scanners and tabulators. Specifically, the County owns four "DS950" scanners and tabulators and one "DS850" scanner and tabulator.³⁰ The DS850 and DS950 scanners and tabulators are self-contained pieces of equipment operating internal firmware and the election database files that are loaded onto them from the EMS.³¹ The only external devices that these scanners and tabulators connect to are a printer and an uninterruptable power supply.³²

From February 2024 through July 25, 2024, the County's DS850 and DS950 tabulators were serviced to correct minor problems relating to their bins, pick rollers, reverse belts, coin cell batteries, verse belts, covers, and flappers.³³ ES&S also performed routine preventative maintenance on the DS950 scanners and tabulators in June 2024 (prior to July 2024 Primary Election and any Logic and Accuracy testing).³⁴

²⁴ *See id.*

²⁵ APP'XDOC 6 at 8; Snell & Wilmer Interviews of Pinal Elections Staff.

²⁶ APP'XDOC 6 at 6-7 (quoting EAC certification test report of EVS 6.3.0.0).

²⁷ *Id.* at 6-7.

²⁸ APP'XDOC 4 at 7; Snell & Wilmer Interviews of Pinal Elections Staff.

²⁹ Snell & Wilmer Interviews of Pinal Elections Staff.

³⁰ APP'XDOC 6 at 9, APP'XDOC 14 at 1. Pinal County purchased the DS950 models in March 2024. APP'XDOC 14 at 1. Prior to that purchase, Pinal County had DS200 and DS850 model tabulators only. *See id.* Pinal County traded in its DS200 tabulators when it purchased the DS950s. *Id.*

³¹ APP'XDOC 6 at 9.

³² *Id.*

³³ APP'XDOC 15; APP'XDOC 16.

³⁴ *E.g.*, APP'XDOC 6 at 13; APP'XDOC. 15 at 1.

4. USB Thumb Drives and Other Removable Media

The County uses USB thumb drives and other removable media for certain elections processes.³⁵ It is not uncommon for counties to use USB thumb drives as part of election processes.³⁶ In fact, the EPM allows Counties to use “memory stick[s] or other removable electronic storage device[s]” in connection with “the electronic voting system.”³⁷ This is because USBs can be used for many important election functions, [REDACTED]

³⁸

D. Security

The County has a strict and well documented physical security to protect the voting system and the VOTES center’s tabulation room. These physical security measures follow and/or exceed best practices to ensure: (1) that the voting system is not tampered with in the first instance and (2) identifying and tracing any breach in the (unlikely) event there is an authorized access to the voting system.

1. Tabulation Room Generally

As mentioned above, the County’s VOTES center tabulation room (where the voting system is operated) is under 24-hour surveillance and livestreamed to the public on the County’s website, as illustrated by the photograph below.³⁹

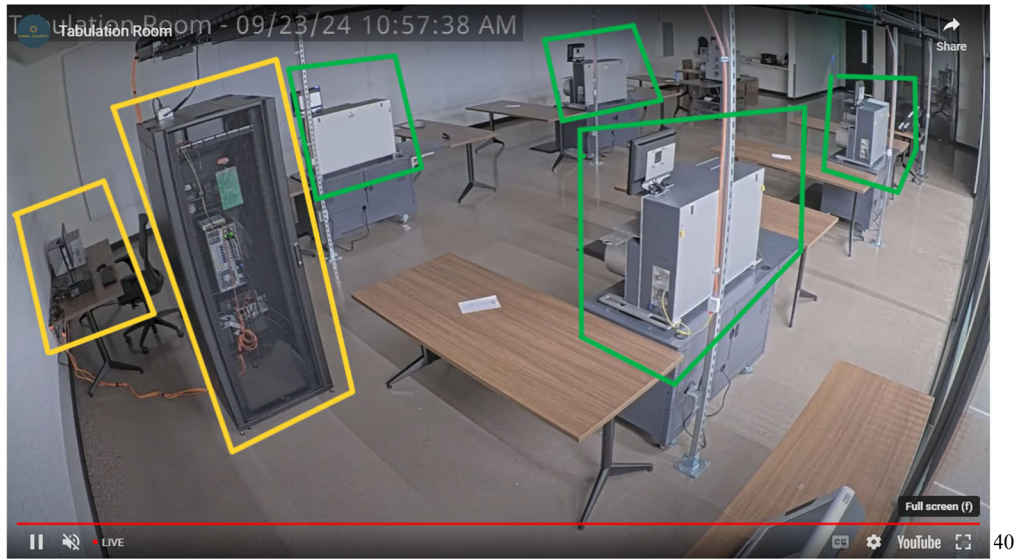
³⁵ APP’XDOC 6 at 11-12.

³⁶ *Id.*

³⁷ Sec’y of State, *Elections Procedure Manual* at 102-104, available at: https://apps.azsos.gov/election/files/epm/2023/EPM_20231231_Final_Edits_to_Cal_1_11_2024.pdf (hereinafter “EPM”),

³⁸ APP’XDOC 6 at 11-12.

³⁹ APP’XDOC 6 at 10. The tabulation room has motion-activated lights; thus if any person goes into the room at night or when the lights are shut off, the lights will turn on and illuminate the person on the live feed. *Id.*



The footage from the tabulation room is maintained for 30 days.⁴¹ The County also maintains a backup of the footage from the start of tabulation through the final canvas, which is archived for a 22-month retention period.⁴²

In order to enter the tabulation room, two authorized people from different political parties must be present; this requirement is enforced through key-card access.⁴³ This bipartisanship requirement even applies to County Elections staff. Any visitors without an authorized key card must sign a visitor log.⁴⁴ Devices with internet connectivity, including cell phones and computers, are prohibited from entering the tabulation room.⁴⁵

2. Voting System

Every voting system component, including the EMS Server, EMS Client, and tabulators, have their ports locked when not in use.⁴⁶ For this, the County uses port blockers, which must be unlocked using a key before a port can be accessed.⁴⁷ These port blockers prevent unauthorized devices from being plugged into USB-ports.⁴⁸

⁴⁰ Screenshot of the VOTES center live feed, taken at 10:57 a.m. on September 23, 2024. The 5050 EMS Workstation and Server are highlighted by the yellow squares on the left-hand side. The tabulators and scanners are highlighted by the green outlines on the right-hand side.

⁴¹ APP'XDOC 6 at 10.

⁴² *Id.*

⁴³ APP'XDOC 6 at 11. Because Recorder Dana Lewis is on the ballot, she had her staff remove her key card access from the tabulation room. *Id.*

⁴⁴ *Id.*


⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

The EMS Server is stored in a locked cage in the Tabulation Room.⁴⁹ It is connected to other voting system components through color-coded cables so that the public can trace the connectivity between devices.⁵⁰ These color-coded cables also show that the EMS Server and other devices are not connected to any external ports.⁵¹

The EMS Client requires multifactor authentication, which is a security best practice.⁵² Pinal County uses 

The tabulation machines and scanners are sealed using wire tamper-evident serialized seals to protect against unauthorized access.⁵⁶ The serial number of the seals are documents on a seal log which is maintained and reviewed by County staff.⁵⁷

E. County Elections Procedures, Generally

In preparation for elections, the County has a robust training system for poll and tabulation workers. In particular, the County provides poll workers with a 109-page training manual covering, among other things, ballot security procedures, chain of custody requirements, voter identification procedures, and how to properly set up a polling location.⁵⁸ The County has an intensive training schedule: for instance, prior to the 2024 Primary Election it conducted poll worker trainings on June 24, 26, 27, 29 and July 1, 2, 6, 8, 10, 11, 13, 16, 18, 19, 20, 22, 23.⁵⁹ Moreover, the County ensures that only full time employees under the supervision of certified elections officials operate tabulators and scanners.⁶⁰

After the ballots are properly transported to the Election Center, they are run through the County's tabulation machines by trained and certified elections staff and temporary workers. After the ballots have been run through the tabulation machines, the data from that machine is transported to the County's central server via hardwire ethernet connection as seen in the racks above the tabulators.⁶¹ From the server, the ballot data is transferred to the EMS Client; the EMS Server then compiles the results.⁶² The results are then transferred via one-way USB thumb drive

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² APP'XDOC 6 at 12.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ APP'XDOC 17.

⁵⁹ APP'XDOC 18.

⁶⁰ APP'XDOC 6 at 17.

⁶¹ Snell & Wilmer Interviews of Pinal Elections Staff.

⁶² Snell & Wilmer Interviews of Pinal Elections Staff.

to a “gateway” laptop that is connected to the internet; from this laptop the results are uploaded to the internet.⁶³ After this, the USB thumb drive is destroyed.⁶⁴

II. July 2024 Primary Election & the Report

With this general background in mind, the next section will discuss the County’s procedures and election processes during the July 2024 Primary Election.

A. Election Machinery Used During the 2024 Primary Election

The County did not use each and every piece of machinery discussed *supra* Section I.C. during the July 2024 Primary Election. Instead of using all five of the ES&S tabulators, the County only used the four DS950s.⁶⁵ The County’s DS850 was stored in a secure vault during the entirety of the primary election.⁶⁶ The DS850 was not connected to power or to internet during the election.⁶⁷ The reason why the County used the DS950s and not the DS850s was purely a supply issue: because this was a Primary Election, five tabulators were not needed; the County anticipates, however, that it will use all five tabulators in the 2024 General Election.⁶⁸

B. Pre-Election L&A Testing

Pursuant to statute, tabulators are required to undergo periodic “Logic & Accuracy” tests administered by the County Recorder and the Secretary of State.⁶⁹ At a broad level, an L&A test confirms that the tabulation machines are accurate by: (1) generating a “script” that shows hypothetical “results” for upcoming races; (2) creating test ballots reflecting the results listed on the script; (3) running the test ballots through the tabulators; and (4) confirming that the vote totals on the tabulators is identical to the vote totals that are in the script.⁷⁰ L&A testing also includes “zero” testing — e.g., running blank ballots through machines and confirming that the vote total is 0 before and after the L&A test.⁷¹

⁶³ Snell & Wilmer Interviews of Pinal Elections Staff.

⁶⁴ Snell & Wilmer Interviews of Pinal Elections Staff.

⁶⁵ APP’XDOC 6 at 14.

⁶⁶ Snell & Wilmer Interviews of Pinal Elections Staff.

⁶⁷ Snell & Wilmer Interviews of Pinal Elections Staff.; *see also* APP’XDOC 6 at 19 (stating that the “DS850 could not have been used to scan and tabulate ballots” for the 2024 July Primary Election); APP’XDOC 4 at 6 (stating that the “2024 Primary Election was not loaded onto the DS850 tabulator”).

⁶⁸ Snell & Wilmer Interviews of Pinal Elections Staff.

⁶⁹ A.R.S. § 16-449. County Recorders are responsible for conducting L&A testing for non-Statewide races (e.g., County and municipal races) while the Secretary conducts L&A testing for Statewide races (e.g., U.S. Senate). APP’XDOC 6 at 13-14.

⁷⁰ APP’XDOC 19 at 200-201; *see also* EPM, *supra* n. 37 at 97

⁷¹ APP’XDOC 6 at 15-16, 18; APP’XDOC 19 at 206.

In Pinal County, the County Recorder conducts L&A testing of tabulation machines both before and after any election.⁷² For the 2024 Primary Election, the County Recorder conducted pre-election L&A testing, including zero testing, on June 21, 2024.⁷³ As part of its L&A tests, the County used the ToolBox Laptop and software to develop an L&A Test Deck.⁷⁴

The L&A test confirmed that there were no discrepancies between the results on the script and the results tabulated by the tabulation machines.⁷⁵ The results of the L&A test were signed by the chairs of the County Republican and Democratic Parties, indicating that they were present during the test and that they agreed it was conducted accurately and completely.⁷⁶

The Secretary of State conducted its pre-election L&A test on the four DS950 tabulators and scanners on June 25, 2024.⁷⁷ The results of this L&A test ultimately showed no discrepancies between the results on the scrip and the results tabulated by the tabulation machines.⁷⁸ However, during the State L&A test the Secretary had to manually adjudicate the ballots due to an initial mismatch in expected totals versus machine totals.⁷⁹ The Secretary ultimately determined the mismatch was caused by its own error: a State employee marked one of the test ballots incorrectly (*i.e.*, marked the ballot in a way that did not match the test script, and therefore caused the test script and the tabulated results to differ).⁸⁰ The Secretary accordingly issued the County a “Logic & Accuracy Equipment Certificate.”⁸¹

C. Election Day Chain of Custody & Tabulation

During the September 11-12 site visit, Mr. Macias conducted a detailed investigation into the County’s chain of custody procedures during the July 2024 Primary Election. In particular, Mr. Macias “requested information on... on the chain of custody of mail ballot packets, chain of custody and security of Election Day ballots, reconciliation processes and forms, ballot duplication processes, personnel who operate scanners and tabulators, etc.”⁸²

In Mr. Macias’s expert opinion, “Pinal County’s operations followed, or exceeded, standard election practices for each of the processes I inquired about.”⁸³ The County also had “documentation supporting the described processes,” including “batch sheets and a binder that

⁷² See APP’XDOC 20 through APP’XDOC 24; *see also* EPM, *supra* n. 37 at 91 (County Recorders have discretion to conduct pre- and post-election L&A tests in addition to SOS L&A testing)

⁷³ APP’XDOC 20 at 1; APP’XDOC 22 at 1.

⁷⁴ APP’XDOC 6 at 8.

⁷⁵ APP’XDOC 21; APP’XDOC 22; APP’XDOC 6 at 14.

⁷⁶ APP’XDOC 20 through 22; APP’XDOC 6 at 14.

⁷⁷ APP’XDOC 25 at 1; APP’XDOC. 6 at 14.

⁷⁸ APP’XDOC 25; APP’XDOC 6 at 14.

⁷⁹ APP’XDOC 6 at 14-15.

⁸⁰ *Id.* at 15.

⁸¹ APP’XDOC 26.

⁸² APP’XDOC 6 at 7.

⁸³ *Id.*

resides at each scanner and tabulator documenting the date, batch number, number of ballots, type of ballot ... and running total of ballots scanned and tabulated for the respective machine.”⁸⁴

Like at all other times, the tabulation room was livestreamed while votes in the July Primary Election were being tabulated on the DS950 machines. Moreover, the tabulation room was under constant surveillance by partisan observers from the Republican and Democratic parties.⁸⁵

D. Post Election Processes, Supervisor Cavanaugh’s Report, and Canvass.

1. Post Election Hand Count Audit

Pursuant to the EPM and A.R.S. § 16-602(B), the County conducted a hand count audit of early and in-person votes from August 1 through August 3, 2024.⁸⁶ This audit covered three precincts and 1% of early ballots.⁸⁷ The early vote hand count audit found no difference between the hand count and machine count for every batch sampled.⁸⁸ The in person hand count audit likewise found no difference between the hand count and machine count for every batch sampled.⁸⁹

2. Post-Election L&A Testing

On August 9, 2024, the County conducted a post-election L&A test.⁹⁰ Prior to conducting the post-election L&A test, the County ran a zero report, which confirmed that the DS950s currently did not have any votes stored on them.⁹¹ The post-election L&A test was conducted using the same ballots as the pre-election L&A test.⁹²

With one exception, post-election L&A testing was also performed using the same process as the pre-election tests.⁹³ The one exception was that, consistent with best practices, during the post-election L&A tests, the County had the DS950 tabulators and scanners report the results individually instead of aggregating the results in the EMS Server (which was done during the pre-

⁸⁴ *Id.*

⁸⁵ APP’XDOC 26.

⁸⁶ APP’XDOC 6 at 17-18; EPM, *supra* n. 37 at 221-242.

⁸⁷ APP’XDOC 27.

⁸⁸ APP’XDOC 28. The early ballot hand count sampled batches # 67, 68, 69, 70, and 71, which included early ballot votes for the Republican Party Primary for U.S. Senate; the Republican Party Primary for U.S. Representative for CD 6; the Republican Party Primary for State Senator for District 7; and the Republican Party Primary for State Representative or District 17. *Id.*

⁸⁹ APP’XDOC 29. The in-person hand count audit sampled batches # 25, 34, and 100, which included votes for the Republican Party Primary for U.S. Senate; the Republican Party Primary for U.S. Representative for CD 6; the Republican Party Primary for State Senator for District 7; and the Republican Party Primary for State Representative or District 17. *Id.*

⁹⁰ APP’XDOC 23; APP’XDOC 24.

⁹¹ APP’XDOC 6 at 18.

⁹² *Id.*

⁹³ *Id.*

election L&A tests).⁹⁴ This was done to ensure that the results of the post-election L&A tests did not accidentally get incorporated into the results of future elections.⁹⁵

Similar to the pre-election L&A tests, this L&A test did not show any discrepancy between the test script results and the machine count results.⁹⁶ The post-election L&A report was signed by the chairs of the County Republican and Democratic Parties, indicating that they were present during the test and that they agreed it was conducted accurately and completely.⁹⁷

3. After Losing in the 2024 Primary Election by 30%, Supervisor Cavanaugh Issues a “Report of Obvious Errors in the 2024 Primary Election.”

During the July 2024 Primary Election Supervisor Cavanaugh competed against Ross Teeple and Charles Austin for the Republican Party nomination for County Sheriff. Supervisor Cavanaugh received 29.66% of the vote (totaling 14,431 votes); Teeple received 64.95% of the vote (totaling 31,600 votes); and Austin received .37% of the vote (totaling 2,442 votes).⁹⁸

On August 10, 2024, Cavanaugh authored a “Report of Obvious Errors in the 2024 Primary Election.”⁹⁹ The Report challenged the results of the Primary elections for County Sheriff, County Assessor, County Attorney, and County Supervisors for Districts 1, 4, and 5 (the “County Races”), based on alleged statistical “anomalies” and other “evidence” that machines had been tampered with.¹⁰⁰

The first section of the report focuses on these statistical “anomalies.” In particular, the Report asserts that in a typical election there will be some variation between the percentage of votes cast for each candidate in early votes versus in-person votes.¹⁰¹ In other words, Cavanaugh claims that in a typical election Candidate A might receive 55% of early votes, but only 45% of in person votes. Cavanaugh further claimed that in a normal election the difference between the early and in-person votes shrinks as more vote totals are reported, resulting in a bell-curve.¹⁰² In contrast, Cavanaugh determined that there was “almost no variation” between early and in person votes in the County Races.¹⁰³ Cavanaugh also determined that the percentage difference between early and in person votes did not follow the “normal” bell curve format as more votes were reported.¹⁰⁴

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ APP’XDOC 23, APP’XDOC 24.

⁹⁷ *E.g.*, APP’XDOC 23 at 1; APP’XDOC 6 at 18.

⁹⁸ *Election Day Reporting*, Pinal County, available at:

<https://results.enr.clarityelections.com/AZ/Pinal/121811/web.317647/#!/summary> (last accessed Oct. 6, 2024).

⁹⁹ APP’XDOC 1.

¹⁰⁰ *Id.* at 1.

¹⁰¹ *Id.* at 4-11.

¹⁰² *Id.* at 5.

¹⁰³ *Id.* at 4-11.

¹⁰⁴ *Id.* at 6-8.

Cavanaugh asserts that “[o]ne clear explanation” for these supposed statistical anomalies in the County Races is “data manipulation.”¹⁰⁵ The allegations that Cavanaugh makes in support of this theory are that: (1) the County’s two Toolbox laptops and DS850 Tabulator were hidden from the 24/7 livestream camera during the Primary Election;¹⁰⁶ and (2) the two Toolbox laptops were “WI-FI enabled, which was concerning” and had the capability to run the DS850 and DS950 software.¹⁰⁷

Cavanaugh further asserts that “[a] person who claimed to be from inside the [Pinal County] Elections Office began to send Supervisor Cavanaugh emails in late December 2023” which “described various problems inside the elections office, including apparent lack of security for ballots.”¹⁰⁸ Later, in “late June or early July” 2024, Cavanaugh met with December Cox, a candidate for County Assessor.¹⁰⁹ Mr. Cox told Supervisor Cavanaugh that “an employee from inside the Election Office” was being paid “hush money” and thought that some identified issue with the County Elections Department “wasn’t right.”¹¹⁰

Finally, the Report alleges that someone within Pinal County released vote count data before it was officially uploaded in violation of A.R.S. § 16-551.¹¹¹ In support of this argument, the Report cites to a July 23, 2024, email allegedly sent from a person named Boots Hawks stating that: “I just received an alarming message from Teresa [Martinez] that relayed some disturbing numbers to me. So far, we’ve only had 5,487 Republican voters in LD16 vote. The Dems have had 5,272...”¹¹²

4. Canvass

Pinal County canvassed the July 2024 Primary Election on August 12, 2024.¹¹³ During the official canvass, Cavanaugh orally objected on several occasions, but ultimately voted to approve the canvass “under duress.”¹¹⁴

¹⁰⁵ *Id.* at 10.

¹⁰⁶ *Id.* at 13.

¹⁰⁷ *Id.* at 11-12.

¹⁰⁸ *Id.* at 13.

¹⁰⁹ *Id.* at 14.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 16.

¹¹² *Id.*

¹¹³ Pinal County, *Official Canvass Primary Election July 30, 2024*, https://www.pinal.gov/DocumentCenter/View/20296/July_30_2024_Primary_Election_Canvass-PDF?bidId= (last accessed Oct. 6, 2024); *see also* Pinal County, Press Release, *Board of Supervisors Canvass 2024 Primary Election Results* (Aug. 12, 2024) (indicating that the canvass happened “today” on August 12, 2024), <https://www.pinal.gov/CivicAlerts.aspx?AID=1236> (last accessed Oct. 6, 2024).

¹¹⁴ *E.g.*, Jen Fifield, *Disruptions as Arizona counties certify primary election may signal what’s to come in November*, Vote Beat Arizona, (Aug. 13, 2024), <https://www.votebeat.org/arizona/2024/08/13/pinal-county-election-certification-kevin-cavanaugh-aye-under-duress/> (last accessed Oct. 6, 2024).

III. Technical Review

On August 21, 2024, the Pinal County Board of Supervisors directed staff to work with the County Elections department and outside counsel to review the methodology Cavanaugh used in his Report and evaluate the technology utilized in the Primary Election to determine if there is any validity to Cavanaugh's allegations. The County retained Snell & Wilmer to assist in the review and was directed by the County Manager during the entirety of the process.

A. Experts

Snell & Wilmer promptly retained three experienced elections experts: Dr. Sean Trende, RSM Elections Solutions, LLC, and Pro V&V, Inc.

Dr. Trende is the Senior Elections Analyst for RealClearPolitics and a nonresident fellow at the American Enterprise Institute. He is a specialist in political trends, voting patterns, demographics, and statistics. Among other things, he has served as an expert witness in several election matters in Arizona, including in *D.N.C. v. Reagan*, 329 F.Supp.3d 824 (D. Ariz. 2018), which ultimately was decided by the U.S. Supreme Court and upheld the out of precinct voting model that the County utilizes. He holds degrees from Ohio State University (Ph.D); Duke University (J.D.) and Yale University (B.A.). For this matter, Dr. Trende was retained to analyze the various statistical "anomalies" included in Supervisor Cavanaugh's Report. His expert report is attached in the Appendix at Document 7.

Ryan Macias is the founder of RSM Elections Solutions, LLC. He is an expert in election technology, security, and administration. Prior to founding RSM Election Solutions, Mr. Macias worked in the California Secretary of State Office of Voting Systems Technology Assessment and served as the Acting Director of the EAC's Voting System Testing and Certification Program. Mr. Macias served as the Secretary of State's independent consultant during the 2020 audit commissioned by the Arizona State Legislature. He also was engaged as a consultant during hand count audits in Fulton County, Georgia and was involved in a review of voting systems used in Antrim County, Michigan. For this matter, Mr. Macias was retained to evaluate the County's chain of custody, security, and other elections procedures. His expert report is attached in the Appendix at Document 6.

Pro V&V Inc. is a software and third-party test laboratory that specializes in testing elections machines. It is one of only two companies with an EAC-accredited voting system test laboratory. Pro V&V was retained by Maricopa County in 2021 to perform a post-election field audit of the County's Dominion Voting Systems Democracy 5.5-B voting system. For this matter, Pro V&V imaged the hard drives of the EMS Server, the backup EMS Server, ToolBox Laptop, and the DS950 and DS850 tabulation machines. Pro V&V's team was led by Project Manager Michael Walker. His report and accompanying technical analysis¹¹⁵ are attached in the Appendix at Documents 4-5.

¹¹⁵ The Technical Analysis is confidential and has not been included in the public version of this Evaluation. However, Mr. Walker's report reflects the data contained in the technical analysis.

B. September 11 and 12 Technical Assessment

In order to evaluate Cavanaugh’s claims that data had been “manipulated,” the County’s experts agreed that it was necessary for Pro V&V to conduct an on-site technical assessment of the EMS Server, EMS Client, ToolBox Laptops, DS950s and DS850. The experts also agreed that during that on-site analysis, Mr. Macias would interview County Elections staff, inspect the County’s election administration procedures, and, in particular, evaluate chain of custody documentation.

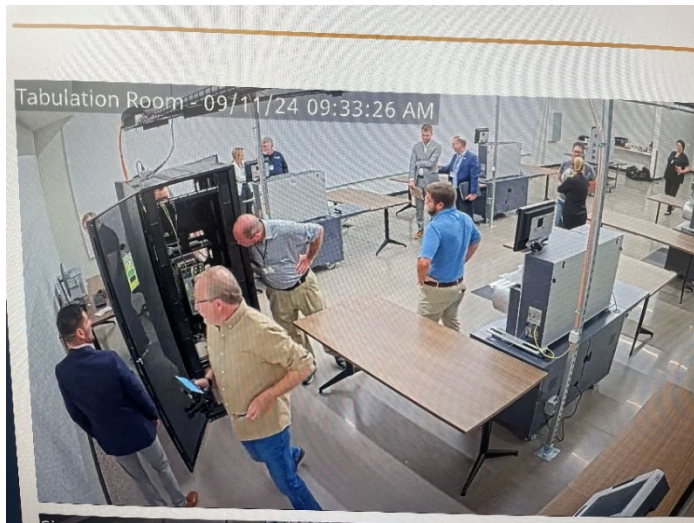
The County coordinated this on-site technical analysis with County Recorder Dana Lewis and the Secretary of State. The County, County Recorder, and Secretary of State agreed as to the parameters of how the technical assessment would be administered. In particular, the parties agreed that Pro V&V would be permitted to image the hard drives of: (1) both EMS Servers; (2) all five DS950 and DS850 tabulation machines; (3) the tabulator workstations; and (4) the ToolBox Laptop that was used during the July 2024 Primary Election. Pro V&V would also be permitted to verify the system’s hash values while on site.

The digital imaging would be conducted by creating a bit-by-bit “clone” of the hard drives of the machines onto separate, new hard drives. After the imaging was complete, Pro V&V would be permitted to return to its laboratory in Huntsville, Alabama with the cloned hard drives and analyze the data to determine if any manipulation had occurred.

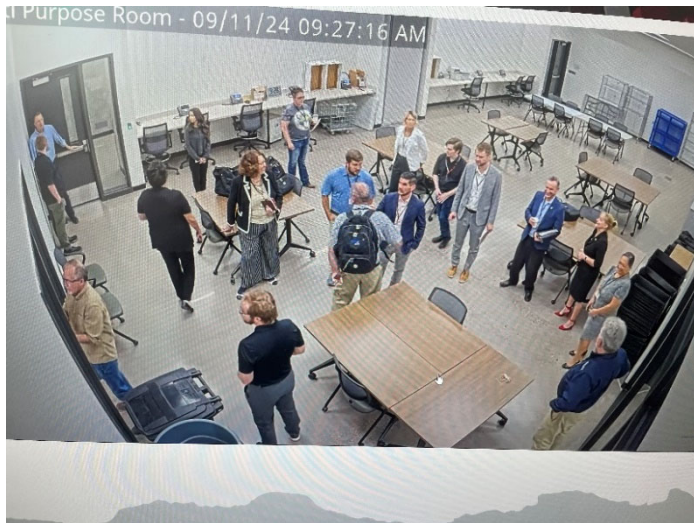
The on-site assessment began on September 11, 2024, at around 8:30 a.m. It was attended by County Recorder Lewis and her election staff; Christina Estes-Werther from Pierce Coleman; State Elections Director Lisa Marra; Joesph Kanefield and Ian Joyce from Snell & Wilmer; Ryan Macias; Michael Walker and Chuck Rice from Pro V&V; Belinda Rodriguez (Chair of the Pinal County Republican Committee); Lisa Sanor (Chair of the Pinal County Democratic Committee); and representatives from ES&S.¹¹⁶ The County photographer was also briefly present to take photographs of the voting machines for documentary purposes.

The entire technical review took place inside the VOTES center’s tabulation and all-purpose rooms — both of which are livestreamed to the public as shown below.

¹¹⁶ The ES&S representatives and Joesph Kanefield did not attend the second day of the assessment. On September 11, 2024, several other individuals observed the review from the “fishbowl” room in the VOTES center, including Kirk Fiehler (1st Vice Chair, Pinal County Republican Committee), Kathy Leaman (2nd Vice Chair, Pinal County Republican Committee), and members of the press.



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To begin the technical assessment, Pro V&V established a forensic environment and completed chain of custody provisions for the transfer of equipment between Pinal County, ES&S, and Pro V&V.¹¹⁹ Then, Pro V&V conducted an inventory of the County's voting systems, had the County photographer take pictures of the voting machines, recorded serial numbers, and examined tamper evident seals.¹²⁰

After establishing the environment and following chain of custody hand off-procedures, the cloning process began. Pro V&V opened the DS850 and DS950 tabulators, and EMS Server by first breaching the tamper evident seals, and then removing the outside casing of the tabulators and the EMS Server cage with a screwdriver. Pro V&V then took the hard drives inside the tabulators, EMS server, ToolBox laptop, and workstations and placed them in a cloning device

¹¹⁷ Photograph of the VOTES center tabulation room livestream captured on September 11, 2024.

¹¹⁸ Photograph of the VOTES center all purpose room captured on September 11, 2024.

¹¹⁹ APP'XDOC 4 at 3.

¹²⁰ *Id.*

alongside a new hard drive. The cloning device created a “bit-by-bit” copy of the original hard drive into the new hard drive.¹²¹ It took about 4-6 hours for each hard drive to be cloned; during the cloning process, the cloning devices and hard drives remained in the tabulator room.

While the cloning was ongoing, Mr. Macias interviewed County Recorder Lewis and members of her staff on their election administration procedures, chain of custody process, and other matters. Mr. Macias also requested substantial documentation confirming that chain of custody procedures had been followed for the 2024 Primary Election.

By the end of September 11, 2024, it was clear that the cloning process would extend well into the next day. The parties agreed to complete the technical assessment the next day. Overnight, the parties placed the cloning devices in front of the camera in the tabulation room to ensure they were monitored while the parties were away; Mr. Macias, Pro V&V, and Snell & Wilmer monitored the devices over the course of the night and early morning.

The next day, September 12, 2024, the parties returned to the tabulation room to complete the technical assessment. To start the day, Pinal County transported the secure backup EMS Server into the tabulation room, observing all required chain of custody procedures. Like with the other EMS Server, Pro V&V opened the EMS Server cage by breaking the tamper evident seal, and then removed the hard drives for imaging. While the remaining hard drives were being cloned, Pro V&V ran “hash validations” on the DS850 and DS950 Tabulators.

The entire process ended at around 3:00 p.m. on September 12, 2024. At the end of the technical assessment, Pro V&V placed the clone hard drives into protective packages signed by the County Recorder and political observers. Mr. Walker and Mr. Rice kept the hard drives on their physical person until they returned to Pro V&V’s laboratory in Huntsville, Alabama.

C. Results of Technical Assessment

Mr. Macias’s and Pro V&V’s conclusions are detailed at length in their reports. The following is a brief summation of their findings.

1. Summation of Macias Report

Based on his review, Macias made four conclusions. First, “ES&S software files had not been tampered with or altered from their certified versions.”¹²² Second, “all four DS950 voting tabulators operated properly, tabulating the votes accurately and securely, in the 2024 Primary Election.”¹²³ Third, “the Pinal County VOTES department conducted the 2024 Primary Election following election practices that meet or exceed standard election practices, including chain of custody and security, and are performed in accordance with law.”¹²⁴ Fourth, “the Pinal County [VOTES] department could not have generated a copy of the tabulated results for any contests in

¹²¹ APP’XDOC 4 at 4.

¹²² APP’XDOC 6 at 19.

¹²³ *Id.*

¹²⁴ *Id.* at 20.

the 2024 Primary Election ... until after the close of polls on Election Day.”¹²⁵

In coming to these conclusion, Mr. Macias highlighted, among other things, that: (1) the DS950 machines had passed L&A testing before the primary election; (2) that the hand count audit did not show any mismatch between tabulated results and the hand counted results; (3) that the County maintained substantial documentation laying out chain of custody procedures; (4) there were no discrepancies found in the post-election L&A testing; and (5) that based on the “audit logs” of the tabulator machines it was clear that “the system could not have generated a results report” prior to the close of the polls.¹²⁶

2. Summation of Pro V&V Report

Pro V&V produced a report and an accompanying technical assessment. These documents evaluated four separate “objectives.”

Objective 1 asked whether the “software installed on the county ... tabulators are the same as the software certified by the [EAC].”¹²⁷ Pro V&V confirmed that the software was the same as that certified by the EAC.¹²⁸ Pro V&V also confirmed that: (1) “no abnormal entries from normal operational use were present” and (2) “[t]he 2024 Primary Election was not loaded onto the DS850 tabulator,” meaning that that tabulator was not used during the 2024 Primary.¹²⁹

Objective 2 asked whether there was any “malicious software .. running on the components.”¹³⁰ Using two different types of malware detection software, Pro V&V confirmed that there was no malicious software on the two EMS Servers, two EMS Clients, and the ToolBox Laptop that was used in the July Primary.¹³¹

Objective 3 asked whether the EMS Servers, EMS Clients, or ToolBox Laptop that were connected to the internet during the 2024 Primary Election.¹³² Based on an “inspection of operating system artifacts,” “internet artifacts,” and “external device usage,” Pro V&V determined that there was “[n]o evidence of internet connectivity” on any of the devices.¹³³

Objective 4 was a “file and activity analysis.”¹³⁴ Based on an inspection of “user activity” and “deleted files,” Pro V&V determined that there was no evidence of malicious or unexpected activity on the voting systems.¹³⁵

¹²⁵ *Id.* at 19.

¹²⁶ *Id.* at 13-18.

¹²⁷ APP’XDOC 4 at 4.

¹²⁸ *Id.* at 5-6.

¹²⁹ *Id.* at 6.

¹³⁰ *Id.* at 6.

¹³¹ *Id.*

¹³² *Id.* at 6-7.

¹³³ *Id.* at 7.

¹³⁴ *Id.* at 7

¹³⁵ *Id.* In addition to these findings, Pro V&V made a recommendation as to how Pinal County could further optimize certain equipment in future elections. *Id.*

SECTION 2: EVALUATION OF CLAIMS MADE BY SUPERVISOR CAVANAUGH

Supervisor Cavanaugh’s Report broadly makes three claims about the 2024 Primary Election. First, it argues that the distribution between in-person votes and early votes was “abnormal.”¹³⁶ Second, it argues that vote totals were altered through “data manipulation.”¹³⁷ Third, it argues that the 2024 Primary Election vote totals were leaked before polls closed in violation of A.R.S. § 16-551.¹³⁸ Based on our analysis, we have determined that none of these allegations are accurate. Our full evaluation is below.

I. Claim 1: “Abnormal” Voting Distributions

Dr. Trende’s expert report addresses the problems with Cavanaugh’s statistical analysis in detail. His report entailed two phases. First, Dr. Trende conducted an independent analysis of the vote totals in Pinal County during the 2024 Primary Election and determined they did not show “telltale” signs of fraud. Second, he reviewed Supervisor Cavanaugh’s methodology and underlying calculations, and found them insufficient. His findings are more fully set forth below.

A. The July 2024 Republican Primary Vote Totals Do Not Show Signs of Fraud

Dr. Trende conducted his own independent evaluation of the July 2024 Republican Primary Results. This analysis determined that there were no “telltale” signs of data manipulation.¹³⁹

According to Dr. Trende, “[p]eople are very bad at inventing random numbers, or at creating numbers that follow particular distributions.”¹⁴⁰ Thus, one way to check to see if a distribution has been altered by a person is to see if it follows an expected distribution. When checking for fraud in elections, this is done by evaluating the “distribution of leading, second, and final digits of numbers.”¹⁴¹ In other words, statisticians look at the distribution of the first number in a vote total, the second number in the vote total, and the final number (i.e., if Candidate A received 15450 votes, the “leading number” is 1, the second number is 5, and the final number is 0).¹⁴²

In normal elections, the distribution of the *leading* digit should follow a “logarithmic distribution” where “the most common value is 1, followed by 2, followed by 3, and so forth.”¹⁴³ Elections results follow this distribution because “it is ‘harder’ to get to 900 ballots than 200 ballots, and more difficult to get to 8000 ballots than 1000.”¹⁴⁴ The *final* digits, on the other hand,

¹³⁶ APP’XDOC 1 at 4-11.

¹³⁷ *Id.* at 10-12.

¹³⁸ *Id.* at 16.

¹³⁹ APP’XDOC 7 at 4-9.

¹⁴⁰ APP’XDOC 7 at 4.

¹⁴¹ *Id.*

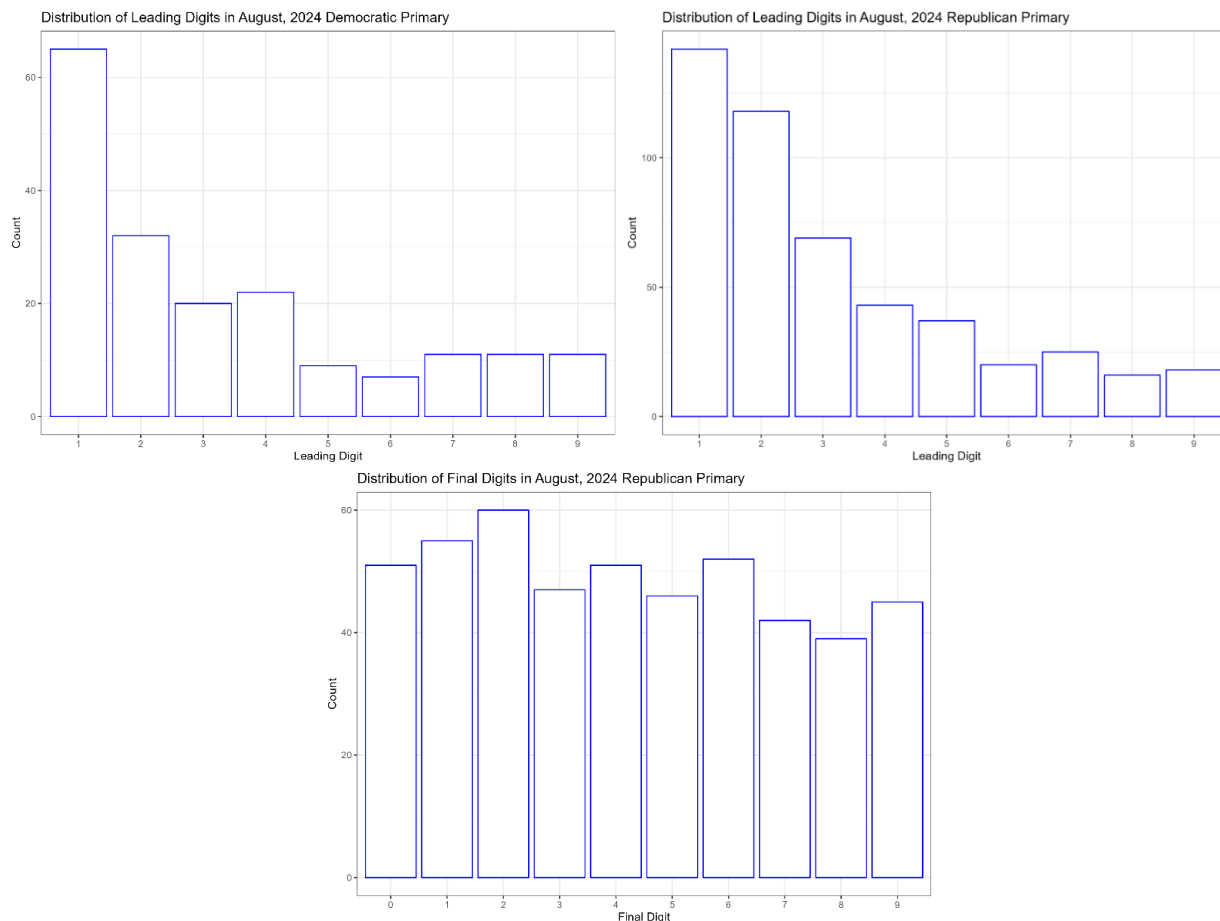
¹⁴² *Id.*

¹⁴³ *Id.* at 5.

¹⁴⁴ *Id.*

should follow a roughly uniform distribution, with a slight drop off towards higher numbers. (like the dice rolls described *infra*).¹⁴⁵

The charts below shows the “leading digit” and “final digit” distributions for the July 2024 Primary Election in Pinal County. As you can see, the leading digit distribution follows a logarithmic distribution while the final digit distribution follow a uniform distribution — for both party primaries.



In other words, the tools that experts would typically use to evaluate whether fraud exists in an election do not show any fraud in the Pinal County Republican Primary for 2024.¹⁴⁶

B. Supervisor Cavanaugh’s Analysis Suffers from Several Methodological Errors, Rendering it Unreliable and Inaccurate

In addition to the fact that there are no facial signs of fraud in the July 2024 Primary Elections returns, Dr. Trende identified several methodological errors with Cavanaugh’s Report that render his statistical analysis unsound.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 4-9.

1. Supervisor Cavanaugh’s Report and Work Papers Have Basic Math Errors and Are Missing Information

The workpapers that Cavanaugh included with his Report show a litany of basic math and computational errors. For instance, Cavanaugh includes in his workpapers a document titled “Pinal County 2024 Primary Election: Analysis of Anomalies in Primary Returns” (the “Analysis”).¹⁴⁷ The *first* example included in the Analysis is a chart showing the 2016 Republican Primary for Pinal County Board of Supervisors for District 2, as shown below (the highlighting is Supervisor Cavanaugh’s):

2016 Pinal				
BOS DIST 2 - 2016				
	EARLY	POLL	PROVISIONAL	Total Votes
WAYNE BACHMANN	435	149	24	608
TISHA CASTILLO	482	244	37	763
CHERYL CHASE	786	243	21	1050
MIKE GOODMAN	796	398	76	1270
MANUEL VEGA	55	17	6	78
WRITE-IN	10	1	1	3769
TOTAL	2564	1052	165	7538
WAYNE BACHMANN	17%	14%		Diff
TISHA CASTILLO	19%	23%		4.40%
CHERYL CHASE	31%	23%		7.56%
MIKE GOODMAN	31%	38%		6.79%
MANUEL VEGA	2%	2%		0.53%
WRITE-IN	0%	0%		

This chart claims there were 2,564 early votes in the election, 1,052 in-person votes, 165 provisional votes, and 3,769 write in votes.¹⁴⁹ According to Dr. Trende, it would be “highly unusual for 3,769 write-in votes to be cast in an election where no other candidate received more than 1,270 votes *and indeed, this is an error.*”¹⁵⁰ In particular “3,769 is the sum of 608, 763, 1050, 1270, and 78, which are the five cells immediately above.”¹⁵¹ Thus, “[i]t appears that Supervisor Cavanaugh accidentally cut-and-pasted the ‘sum’ formula from the ‘Total’ row into this cell.”¹⁵² This has the effect of “doubling the number of votes cast in the race.”¹⁵³

The *second* example in the Analysis is from the 2020 Republican Primary for Pinal County Board of Supervisor for District 2, as shown below (again, the highlights are from Supervisor Cavanaugh).

¹⁴⁷ APP’XDOC 2.

¹⁴⁸ APP’XDOC 2 at 1.

¹⁴⁹ *Id.*

¹⁵⁰ APP’XDOC 7 at 11 (emphasis added).

¹⁵¹ *Id.*

¹⁵² *Id.* at 12.

¹⁵³ *Id.*

2020 Pinal					
BOS DIST 2 - 2020					
	EARLY	POLL	PROVISIONAL	Total Votes	
MIKE GOODMAN	4810	1242	35	6087	
CHUCK GRAY	3666	754	10	4430	
				0	
Write In	13	7	0	20	
	8489	2003	45	10537	
					Diff
MIKE GOODMAN	45.65%	62.35%			16.70%
CHUCK GRAY	34.79%	37.30%			2.51%
	0	0.00%	0.00%		0.00%
Write In	0.12%	0.73%			0.61%

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The problem with this chart is that the total percentage of early votes attributed to Mike Goodman (45.65%), Chuck Gray (34.79%), and Write Ins (.12%) equal 80.44% — not 100%.¹⁵⁵ This is statistically impossible.¹⁵⁶ While it is not entirely clear how Cavanaugh made this mistake, the fact is that “the correct percentages are 56.67% of the early vote for Mr. Goodman and 43.19% for Mr. Gray.”¹⁵⁷ This substantially alters the discrepancy between early votes and poll votes for both candidates: Goodman’s discrepancy becomes 5.35% (not 16.7%) and Gray’s discrepancy becomes 5.54 % (not 2.51%). In other words, the difference in percentage of early votes and in-person votes received by Goodman and Gray goes from substantial, to effectively equal.

Beyond this basic math and excel errors, it appears that Cavanaugh did not have the final election results in completing his Report. This is illustrated by the *third* example in the Analysis, which points to the 2024 Republican Party Primary for County Assessor as an “anomalous” election result.

¹⁵⁴ APP’XDOC 2 at 2.

¹⁵⁵ APP’XDOC 7 at 12.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

COUNTY ASSESSOR 2024				
PINAL COUNTY 2024				
	EARLY	POLL	PROVISIONAL	Total Votes
STORM COX	7423	2930	0	10353
DOUG WOLF	19145	7551	0	26696
			0	0
Write In	29	55	0	84
	26597	10536	0	37133
				Diff
STORM COX	27.91%	27.81%		0.10%
DOUG WOLF	71.98%	71.67%		0.31%
0	0.00%	0.00%		0.00%
Write In	0.08%	0.15%		0.07%

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This chart states that Doug Wolf received 19,145 early votes. But, although Doug Wolf received 19,145 early votes in the first ballot drop, after the final votes were tallied his number of early votes increased to 24,623.¹⁵⁹ These later drops also tended to favor Storm Cox.¹⁶⁰ A corrected table, with the actual final vote count, is shown below:

Candidate	Early Vote Total	Election Day Total	Early Vote Share	Election Day Share	Difference
COX, DECEMBER 'STORM'	10,095	2,930	29.01%	27.88%	1.14%
WOLF, DOUGLAS	24,623	7,551	70.77%	71.85%	1.08%
Write-in	76	29	0.22%	0.28%	0.06%
Total:	34,794	10,510	—	—	—

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As the corrected chart illustrates, Wolf’s share of the early vote drops to 70.8% while Cox’s increases to 29%. Thus, the true differential between the early vote and in person vote is 1.08% for Wolf and 1.14% for Cox. These percentages are orders of magnitude larger than the difference ratios claimed by Cavanaugh.¹⁶²

Errors like these are common throughout Cavanaugh’s work papers.¹⁶³ And they are not insignificant, as these errors form the backbone of many of the claims. Take, for instance, the following histogram that Cavanaugh includes in one of his “methodology” workpapers:

¹⁵⁸ APP’XDOC 2 at 2.

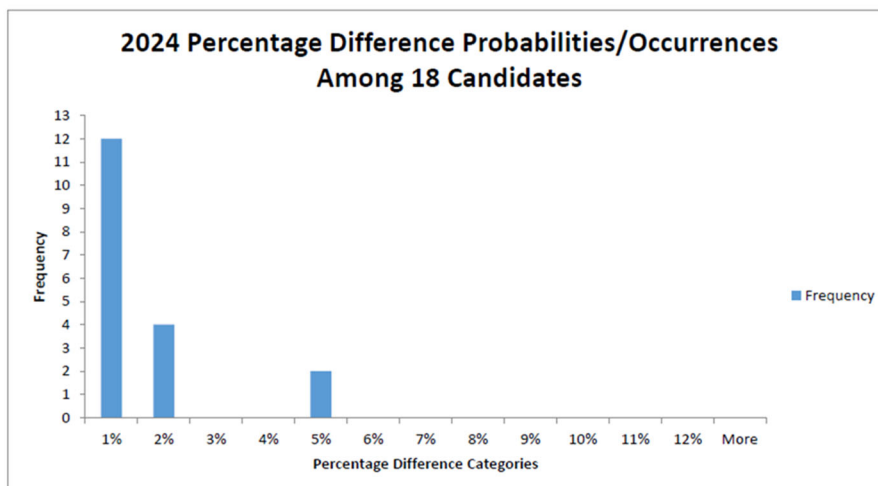
¹⁵⁹ APP’XDOC 7 at 13

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ APP’X DOC 7 at 14.



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Because Cavanaugh did not properly calculate the in-person/early vote differential in the Cox/Wolf race, this histogram is inaccurate. Because of the true differences in the vote totals for Cox and Wolf, there should actually be 10 candidates with differences of less than 1%, and 6 candidates with differences of between 1% and 2% (instead of 12 and 4).¹⁶⁵ This of course, assumes that every other calculation was done correctly — which is questionable at best.

2. Supervisor Cavanaugh’s Analysis of “Normal” Distributions Is Flawed

A common claim that Cavanaugh makes in the Report and Analysis is that a bell curve is a “normal” distribution.¹⁶⁶ It is on this premise that Cavanaugh asserts that any non-bell curve distribution is “abnormal” — because Cavanaugh determined that the County Races did not follow a bell curve distribution, he therefore claims those distributions are somehow “abnormal.”¹⁶⁷

As Dr. Trende explains, Cavanaugh’s view that bell-curves are “normal” and that all non-bell curves are “abnormal,” “reflects a common misunderstanding.” Put simply, there are many types of typical, normal, distributions that are not bell curves. But, even setting this aside, when properly plotted, the results from the July 2024 Republican Primary actually *do* show a bell curve shape.

i. There is a Difference Between “Normal” (*i.e.*, Bell Curve) Distributions and “Typical” Distributions

In statistics, the term “Normal” distribution is a specific term of art that is often used to describe a bell-curve, or “Gaussian” distribution.¹⁶⁸ But, this term of art “should not be conflated with ‘normal’ or typical” distributions.¹⁶⁹ There are many ways that randomness can manifest that

¹⁶⁴ APP’XDOC 3 at 3.

¹⁶⁵ APP’X DOX 7 at 15.

¹⁶⁶ *E.g.*, APP’XDOC 1 at 4-5.

¹⁶⁷ *E.g.*, *Id.* at 6.

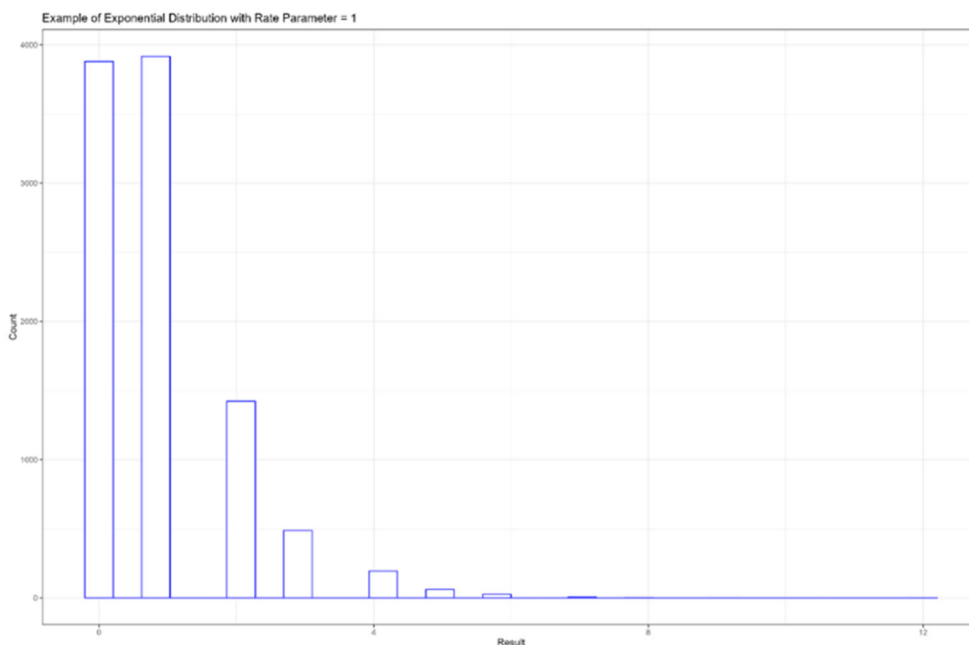
¹⁶⁸ APP’XDOC 7 at 15-16.

¹⁶⁹ *Id.* at 16.

is “normal” but not “Normal” in the formal sense.¹⁷⁰ If one were to chart the results of flipping a coin 10,000 times, the distribution would not show a bell-curve because there are only two possible results: heads or tails.¹⁷¹ Yet, this is still a typical, expected, “normal” result of randomly flipping a coin 10,000 times (in statistics, the results of flipping a coin would be called a “binomial” distribution).¹⁷² The same can be said for charting the results of a dice throw: there is no doubt that the results are random, but if one were to throw the dice 10,000 times the resulting chart would show approximately equal results for 1, 2, 3, 4, 5, and 6 rather than a bell curve (this is known as a “Uniform” distribution).¹⁷³

With this in mind, many of the “abnormal” charts included in Cavanaugh’s reports are actually typical, expected, random distributions. Cavanaugh takes particular aim at graphs he claims show a “skewed” pattern between in person and early vote ratios: *i.e.*, Cavanaugh believes that any chart that has an asymmetrical distribution or “dips” are “abnormal.”¹⁷⁴ But asymmetrical or skewed distributions are common. For instance, “[e]xponential” distributions (seen in earthquake aftershocks) and “beta” distributions (seen in rainfall, insurance claims, and cancer rates) both show somewhat “skewed” results, as shown below:¹⁷⁵

Exponential Distribution



¹⁷⁰ *Id.*

¹⁷¹ *Id.*

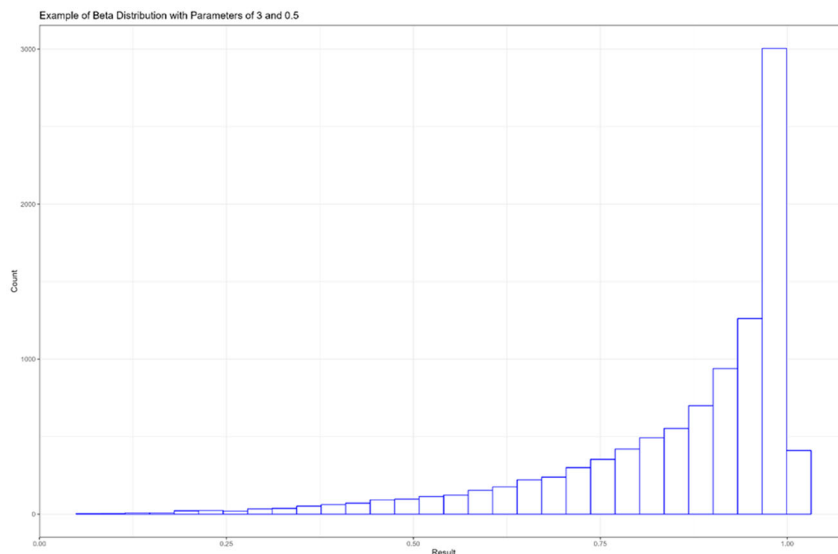
¹⁷² *Id.* at 17

¹⁷³ *Id.* at 17.

¹⁷⁴ *E.g.*, APP’XDOC 1 at 6.

¹⁷⁵ APP’XDOC 7 at . 18-21.

Beta Distribution



At bottom, “the fact that the differences between early vote shares and Election Day vote shares” are not distributed in a bell-curve “does not mean anything is amiss.”¹⁷⁶ Because the proposition that any “non-bell curve” distribution is “abnormal” undergirds Cavanaugh’s entire Report, his statistical analysis is unreliable.

ii. Properly Plotted, the In Person Versus Early Vote Distribution in the 2024 Primary Election Appear to Follow a “Normal” Distribution

But, the above analysis is academic because the ratios between in person and early voting *do* in fact, follow a “Normal” bell-curve.

The key problem with Cavanaugh’s analysis is that in a “Normal” distribution results must be able to take on any value, either positive or negative.¹⁷⁷ Cavanaugh, however, takes the absolute difference between in person and early voting: in other words, the difference he reports between the two voting types is always positive.¹⁷⁸ When the deviation between two values is very small, using only positive numbers is a problem because it becomes difficult for the left “tail” of the bell curve to exist.¹⁷⁹ Thus, using only absolute numbers, in situations with small deviations, increases the odds that the resulting distribution will appear skewed.¹⁸⁰

Dr. Trende re-ran Cavanaugh’s analysis using all the 2024 Republican Primary races in Pinal County, using the actual difference between in-person and early votes (*i.e.*, both positive and negative values) rather than absolute values. Dr. Trende also used the actual vote totals rather than

¹⁷⁶ *Id.* at 21.

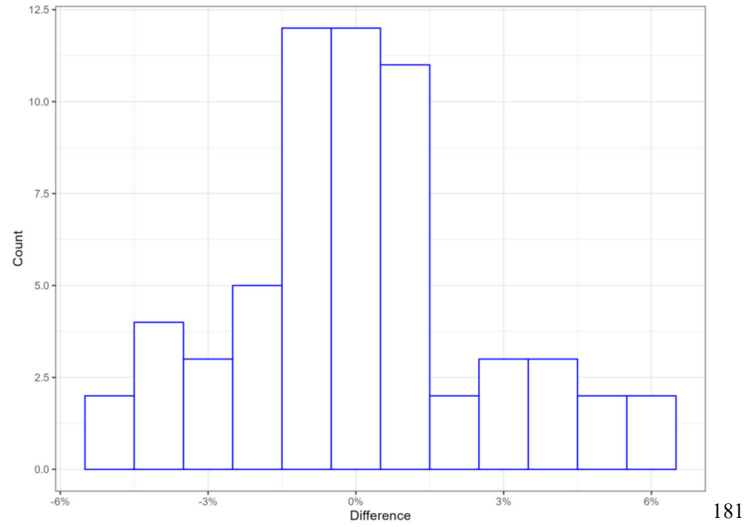
¹⁷⁷ *Id.* at 22.

¹⁷⁸ *Id.*

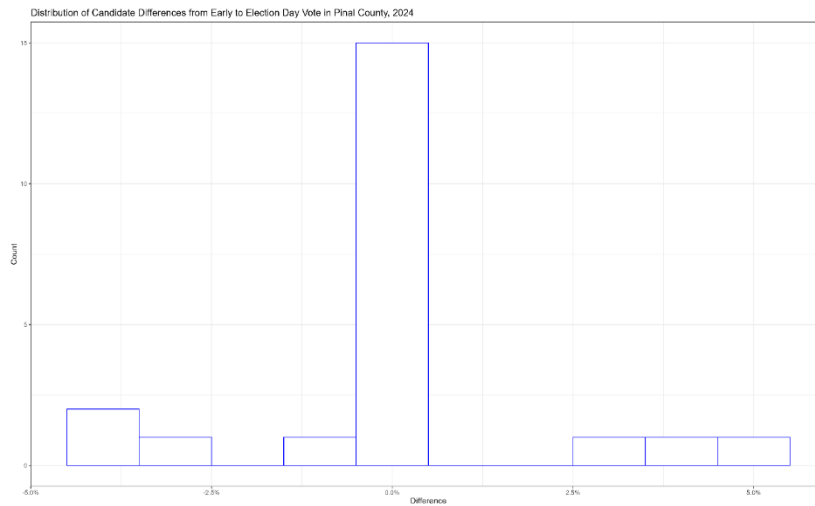
¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

Supervisor Cavanaugh’s incomplete sample. As shown below, the results of this analysis produce a “Normal” bell-curve.



The Democratic Primary also show a “Normal” Distribution, but because it had fewer races the bell-curve shape is “not as filled out.”¹⁸²



So, even if it were correct that only bell-curve distributions are “normal,” the ratio between in-person and early votes during July 2024 Primary Election is “Normal” under that paradigm.

¹⁸¹ *Id.* at 23.

¹⁸² *Id.* at 23-24.

3. Because Election Results Are Clustered in a Single Year, it is Impossible to Determine a “Typical” Distribution Between In Person and Early Votes

Finally, Cavanaugh’s statistical analysis is lacking because there is not enough data to determine what ratio between in person and early voting is “normal” versus what distribution is “abnormal.”

According to Dr. Trende, “[t]he problem is that the data we have are clustered by year.”¹⁸³ That is, the various election results from 2016 all occur in 2016, and collectively form the basis for a single observation.¹⁸⁴ This creates a small “n” problem, with “n” representing the number of observations available.¹⁸⁵ Put in layman’s terms, the problem is that it is not clear which year should serve as the baseline to form the “typical” distribution.¹⁸⁶ This means that even if Cavanaugh were to show that the distributions of in person versus early voting were different in 2016, 2020, and 2024, he does not have sufficient data to show which year is the “normal” distribution and which years are “anomalies.”¹⁸⁷ It could very well be that 2024 is the “normal” year and 2016 and 2020 are the “anomalies.”¹⁸⁸

Indeed, there are several reasons to believe that the 2024 Primary Election was the “normal” year and that 2016 and 2020 were the “anomalies.” For example, in 2016 and 2020 former President Donald Trump urged Republicans to avoid voting by mail.¹⁸⁹ In contrast, by the July 2024 Primary Election the Republican party urged voters *to* vote by mail. These are the types of variables that have not been considered by Supervisor Cavanaugh in labeling certain ratios “normal” and others “abnormal.”

II. Claim 2: “Data Manipulation.”

The second broad claim that Cavanaugh makes is that someone “manipulated” the vote data to reduce or increase the percentage of votes received by certain candidates.¹⁹⁰ As a preliminary point, the basis for this theory is that the distributions between in person and early voting during the 2024 Primary Election were “abnormal.”¹⁹¹ But, as described, the distribution actually did follow a bell curve and Cavanaugh’s statistical analysis lacks credibility.

Outside of “anomalies,” Cavanaugh also alleged certain facts to support his “data manipulation” theory: (1) the County’s ToolBox Laptops had the ability to connect to the internet and could run ES&S software; (2) there was a ToolBox Laptop and “extra tabulator out of site of

¹⁸³ *Id.* at 22.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.* at 23.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.*

¹⁹⁰ *E.g.*, APP’XDOC 1 at 10.

¹⁹¹ *See Id.* (“What causes a flat line in one race but not another? One clear explanation is data manipulation”)

the cameras, and outside visibility poll workers” and (3) that a “person who claimed to be from inside the Elections Office ... described various problems ... including a lack of security for ballots.”¹⁹² It should be noted that all of these pieces of evidence are indirect — *i.e.*, Cavanaugh does not point to any actual evidence of data manipulation, but rather merely points out facts which, lacking context, *might* show that data *could* be manipulated.

Based on our evaluation, none of these facts are malicious or show evidence of data manipulation. And, moreover, the independent Technical Assessment confirmed that no vote was altered during the 2024 Primary Election.

A. There Is No Evidence that Any Piece of Equipment Was Manipulated

1. The County’s DS850 Tabulator Was Not Used During the July 2024 Primary Election

Cavanaugh asserts that the County’s DS850 Tabulator was “out of sight of the cameras” on elections day.¹⁹³ Apparently, the implication Cavanaugh attempts to draw is that someone could have run fake ballots through the DS850, then somehow uploaded those fake results into the EMS Server. However, Pro V&V confirmed that the July 2024 Primary Election software had not been uploaded to the DS850 Tabulator.¹⁹⁴ Personal interviews with County staff also confirmed that the DS850 Tabulator was kept in a secure vault in the VOTES center.

2. The County’s ToolBox Laptops Did Not Manipulate Any Voting Data

Cavanaugh also questions the County’s ToolBox Laptops. In particular, he asserts that: (1) that the County’s two ToolBox Laptops were “equipped with software from ES&S to run the tabulators;” (2) the ToolBox computers “were WI-FI enabled;” and (3) a person could have placed a USB into one or both of these computers and then used the information to “obtain voter data.”¹⁹⁵ It is not entirely clear how these facts even if true, individually or collectively, show data was “manipulated” during the 2024 Primary Election. Regardless, each contention has an innocent explanation.

First, as explained, of the County’s two ToolBox laptops, one remained in its original box, with a tamper evident seal, inside a secured cage during the entirety of the 2024 Primary Election.¹⁹⁶ As such, it could not have been used to “manipulate” data during the 2024 Primary Election.

The other Toolbox Laptop was not equipped with software from ES&S to run the tabulators.¹⁹⁷ Nor was the ToolBox Laptop used as part of the tabulating process.¹⁹⁸ Instead “[t]he

¹⁹² *Id.* at 10-11, 13.

¹⁹³ *Id.* at 10.

¹⁹⁴ APP’XDOC 4 at 6.

¹⁹⁵ APP’XDOC 1 at 12-12.

¹⁹⁶ APP’XDOC 6 at 8.

¹⁹⁷ APP’XDOC 4 at 6.

¹⁹⁸ APP’XDOC 6 at 8.

only ES&S software loaded onto the Toolbox laptop was ES&S Toolbox.”¹⁹⁹ The ToolBox software has “add ons” to “enhance usability experience and streamline various process” — it is not related to tabulation.²⁰⁰ The only “add on” that was run during the 2024 Primary Election was “Text to Speech” and “Test Deck” —to generate Spanish-language translations for ADA-accessible voting machines and to generate test results for L&A testing.²⁰¹

Second, all laptops have the ability to connect to Wi-Fi. The question is not whether the ToolBox Laptops are Wi-Fi “enabled,” but whether either Laptop was actually used to connect to Wi-Fi. Here, Pro V&V determined that “[n]o evidence of internet connectivity was found” on the single ToolBox Laptop that was used during the July 2024 Primary Election,²⁰² and “[o]nly proper zero tunnel connections were made.”²⁰³ This finding is consistent with our interviews of County Elections staff, who stated that the in-use ToolBox laptop is placed on “airplane” mode at all times.

Third, regarding Cavanaugh’s concern that a USB stick could have been placed into the in-use ToolBox laptop and then inserted into a tabulation machine to acquire “voter data,” Pro V&V did not find any evidence that a USB had been inserted into that ToolBox Laptop.²⁰⁴ The only USB activity that Pro V&V detected was that the “*results* of the election were run to place” onto serial numbers 9523090682, 9523090683, and 9523090684 on August 1, 2024, and serial number 9523090681 on August 3, 2024.²⁰⁵ This is consistent with the Pinal County Elections Department standard operating procedure, and best practice, of loading results generated by tabulators onto USB sticks and then inserting those USB sticks into the EMS Server to generate the results. There is no indication that a USB was used to *alter* the vote count that had already been generated.

3. There is No Evidence that Data on the DS950 Tabulators or EMS Server Was Manipulated

Finally, Supervisor Cavanaugh speculates that someone could have used a USB stick and/or the internet to alter the vote totals contained on the DS950 Tabulators or EMS Server. Our investigation did not reveal any evidence to support this theory. According to Pro V&V’s review of the DS950 audit logs, there were “no abnormal entries” in the tabulating system.²⁰⁶ In addition, there was no evidence that data had been “downloaded” into the EMS Servers, no evidence that USB sticks had been inserted into the Servers to generate “internet connectivity,” and no other evidence of “malicious or unexpected activity” on the Servers.²⁰⁷

¹⁹⁹ APP’XDOC 4 at 6.

²⁰⁰ APP’XDOC 6 at 7.

²⁰¹ APP’XDOC 6 at 8.

²⁰² APP’XDOC 4 at 7. Pro V&V did not test the ToolBox Laptop that is currently unopened.

²⁰³ *Id.* at 7.

²⁰⁴ *Id.* at 6.

²⁰⁵ *Id.* at 6.

²⁰⁶ *Id.* at 5.

²⁰⁷ *See generally*, APP’XDOC 7.

B. Additional Information Showing Data Was Not Manipulated

There are several other facts that tend to disprove Cavanaugh’s claim that vote totals were manipulated during the July 2024 Primary Election. First, as stated above, Dr. Trende conducted an analysis and determined that the election vote totals followed expected distribution patters.²⁰⁸ Second, the post-tabulation hand count audit came back 100% accurate.²⁰⁹ Third, Mr. Macias thoroughly evaluated the County’s chain of custody and elections procedures and found them to be at or above industry standard.²¹⁰ Fourth, the County’s elections machines passed post-election L&A testing.²¹¹ These facts, in addition to the technical data discussed above, further support a finding that there was no data manipulation during the July 2024 Primary Election.

C. The “Anecdotal” Evidence of Data Manipulation in the Report Is Either Taken Out of Context or Unreliable

Finally, Cavanaugh references other “anecdotal” allegations that might show data manipulation: (1) after the election, Secretary Fontes stated that Pinal County had “some infrastructure” issues during the election; (2) an internal “whistleblower” reported concerns about the security of ballots and then claimed he was given “hush money” by the County; and (3) Supervisor Cavanaugh’s “depth of advertising” in certain districts was not correlated with election results.²¹² We have investigated each claim to the extent possible, and have found nothing untoward about any of these “anecdotal” allegations.

First, we contacted Colleen Connor, Policy Director for Secretary of State Adrian Fontes, for clarification on his “infrastructure” comment. According to Ms. Connor, Secretary Fontes was referencing a “gas leak near a polling site in Pinal County.”²¹³ Ms. Connor further stated that “[t]he leak had nothing to do with their election facility, building, or polling locations” and that “Mr. Cavanaugh’s reference to Secretary Fontes’ comment appears to have been taken out of context.”²¹⁴

Second, we have not seen any evidence showing that the alleged anonymous “whistleblower” referenced in the Report exists. Regardless, we did investigate the alleged whistleblowers’ generalized “concerns” that there were “various problems inside the elections office, including apparent lack of security for ballots.”²¹⁵ As explained in Mr. Macias’s expert report, the County’s elections processes and security are at or above industry best practices, and there is nothing to suggest these practices were not followed during the 2024 July Primary Election.

Third, because Snell & Wilmer was retained after the July 2024 Primary Election, we were not able to analyze Cavanaugh’s campaign marketing or voter outreach to determine whether the

²⁰⁸ APP’XDOC 7 at 5-9.

²⁰⁹ APP’XDOC 6 at 17-18; APP’XDOC 27.

²¹⁰ APP’XDOC 6 at 17.

²¹¹ APP’XDOC 23.

²¹² APP’XDOC 1 at 2-3, 13.

²¹³ APP’XDOC 30.

²¹⁴ *Id.*

²¹⁵ APP’XDOC 1 at 13.

“depth” of advertising in certain districts “correlated” to election outcomes. However, there are many facial problems with Cavanaugh’s analysis of this issue:

1. Cavanaugh bases his view that the 2024 advertising-to-voting correlation was suspicious on the grounds that results “*seemed* to have little correlation to advertising” rather than any empirical study. Moreover, Cavanaugh concluded that the advertising-to-voting ratio *did* correlate in three Apache Junction precincts;
2. Cavanaugh’s sample size is extraordinarily small, looking at the advertising-to-voting correlation in a single precinct across two elections;
3. Cavanaugh does not consider variables that might impact the advertising-to-voting correlation, like quality of advertising, demographic change, political change, etc.;
4. Cavanaugh did not disclose the underlying metrics upon which his analysis was based; and
5. As mentioned, Cavanaugh’s other statistical analysis of the early vote to in person vote ratio suffered from several basic errors, which undermine any statistical analysis in the Report.

Beyond this, even if there were anomalies in the advertising-to-voting ratio in a single precinct, it would require several degrees of inferences to conclude that this somehow “proves” fraud or data manipulation.

III. Claim 3: Premature Release of Results

Cavanaugh’s third claim is that the running results of certain elections were somehow leaked to third parties prior to the close of polls in violation of A.R.S. § 16-551(C).²¹⁶ We note at the outset that this issue has no connection with data manipulation or voter fraud. Therefore, this claim is tangential to the broader technical claims that Cavanaugh raises in the Report.

Regardless, we have found no evidence that results were leaked prematurely. Mr. Macias analyzed the EMS Server’s audit logs from July 5, 2024 through August 1, 2024.²¹⁷ “According to the audit logs, the County ‘Deactivated’ the ability to display election results .. on July 5, 2024, at 2:19 pm.”²¹⁸ “This mean[s] that [the] system can no longer generate results reports and therefore, cannot display the results, even to staff operating the system.”²¹⁹ The County did not “activate” the ability to display election results “until July 30, 2024” at 7:10pm — or more precisely “7:01:10pm,” which is one minute and ten seconds after the close of polls.²²⁰ “This means that between July 5, 2024, at 2:09pm and July 30, 2023, at 7:01pm, the system *could not have generated*

²¹⁶ APP’XDOC 1 at 16. A.R.S. § 16-551(C) states that “[p]artial or complete tallies of the early election board shall not be released or divulged before all precincts have reported or after the closing of the polls on election day, whichever occurs first.”

²¹⁷ APP’XDOC 6 at 15.

²¹⁸ *Id.* at 16.

²¹⁹ *Id.*

²²⁰ *Id.*

a results report and therefore could not have displayed the results on the system during that time.”²²¹

Moreover, Cavanaugh’s evidence that results were leaked prematurely is an email from or to an individual named “Boots Hawks”, which is shown below:

From: Boots Hawks [REDACTED]@protonmail.com>
Date: Tue, Jul 23, 2024, 5:56 PM
Subject: Extremely Urgent!
To: Boots Hawks [REDACTED]@gmail.com>

Friends this is Extremely Urgent!

I just received an alarming message from Teresa that relayed some disturbing numbers to me. So far, we’ve only had 5,487 Republican voters in LD16 vote, The Dems have had 5,272. She doesn’t know who but two of the candidates we’re supporting are behind. If you haven’t already done so? We need each one of you to head to the recorder’s office and drop off your ballot in person at the official ballot box, or visit the recorder’s office first thing in the morning and vote early. I cannot be any clearer... this is Urgent Friends!

All the work we’ve done together, the meetings, the candidates speaking, the rallies, the BBQ’s bringing many of you closer to candidates than you have ever been. We need you right now like never before. Get out and vote in person or get your ballot into your local drop box. If you’re going to vote in person, I would advise you to go to your polling place as early as possible. Also let’s get your friends and conservative neighbors to vote, offer them a ride to the polling place.

See the attached list of endorsed candidates** the local candidates we endorsed are Donna McBride for Mayor, City Council vote for Brent BeDillon, Patrick Dugan and April Wright. Please vote for all the candidates we’ve endorsed.

Please help us get those in office that will work for us, We the people!

Boots

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This email was sent at 5:56 on July 23, 2024 — before the County began aggregating results and before the County activated the ability to show results.²²³ Moreover, the email does not list election results. It instead shows voter turnout (in this case, likely the number of early ballots cast). Even assuming the turnout numbers were reported by the County, there is no prohibition on releasing voter turnout information before the close of polls. But, it is more probable that this information came from campaign personnel or political parties monitoring voters or polling places. Indeed, based on our interviews with Pinal County Elections staff, we understand that it common for political parties in the area to use voter turnout numbers to incentivize individuals to vote on election day.

SECTION 3: CONCLUSION

For the foregoing reasons, Snell & Wilmer has not been able to verify any of the claims Supervisor Cavanaugh made in his Report. To the contrary, Snell & Wilmer’s evaluation has determined that the Pinal County Elections Department meets or exceeds statutory, Elections Procedures Manual, and best practice standards for ballot security. And, Snell & Wilmer’s

²²¹ *Id.*

²²² APP’XDOC 1 at 16.

²²³ *See* APP’XDOC 6 at 16.

independent analysis of the July 30, 2024, Primary Election has shown no evidence of fraud, data manipulation, or other factors that could have impacted the election results.