

EXHIBIT 3

Manipulation of Election Results in Arapahoe County

PRESS RELEASE

Contact Linda Good Phone 720-331-2563 Email AGoodParalegal@proton.me

COMPUTER SCIENTIST WILL EXPLAIN ARAPAHOE COUNTY ELECTION CRIME

2:30 P.M. TUESDAY MAY 27, 2025, COLORADO STATE CAPITOL (WEST STEPS)

Presenter: Walter C. Daugherty, Ed.D. (Harvard University)
Nationally Recognized Expert in Computer Science

Presentation: Dr. Daugherty will present newly discovered evidence which shows that the official 2020 cast vote record published by Arapahoe County, Colorado, was manipulated during or after the November 2020 election, and manipulated again in 2025. He will answer questions.

What is a cast vote record? A Cast Vote Record (CVR) is a spreadsheet containing one line of data per ballot, listing each voter's choices. When a ballot is scanned, its image is used to generate this data, with each ballot linked to a unique identifier. In Arapahoe County's 2020 general election, 354,247 ballots were cast, scanned, and tabulated, which produced a CVR with 354,247 lines.

How are election results presented to the public? Election results are presented to the public upon request or by publishing the official cast vote record for each county on the county website.

Can the cast vote record be manipulated? Yes, any digital information can be manipulated, either manually, or by using a software script to execute the manipulation.

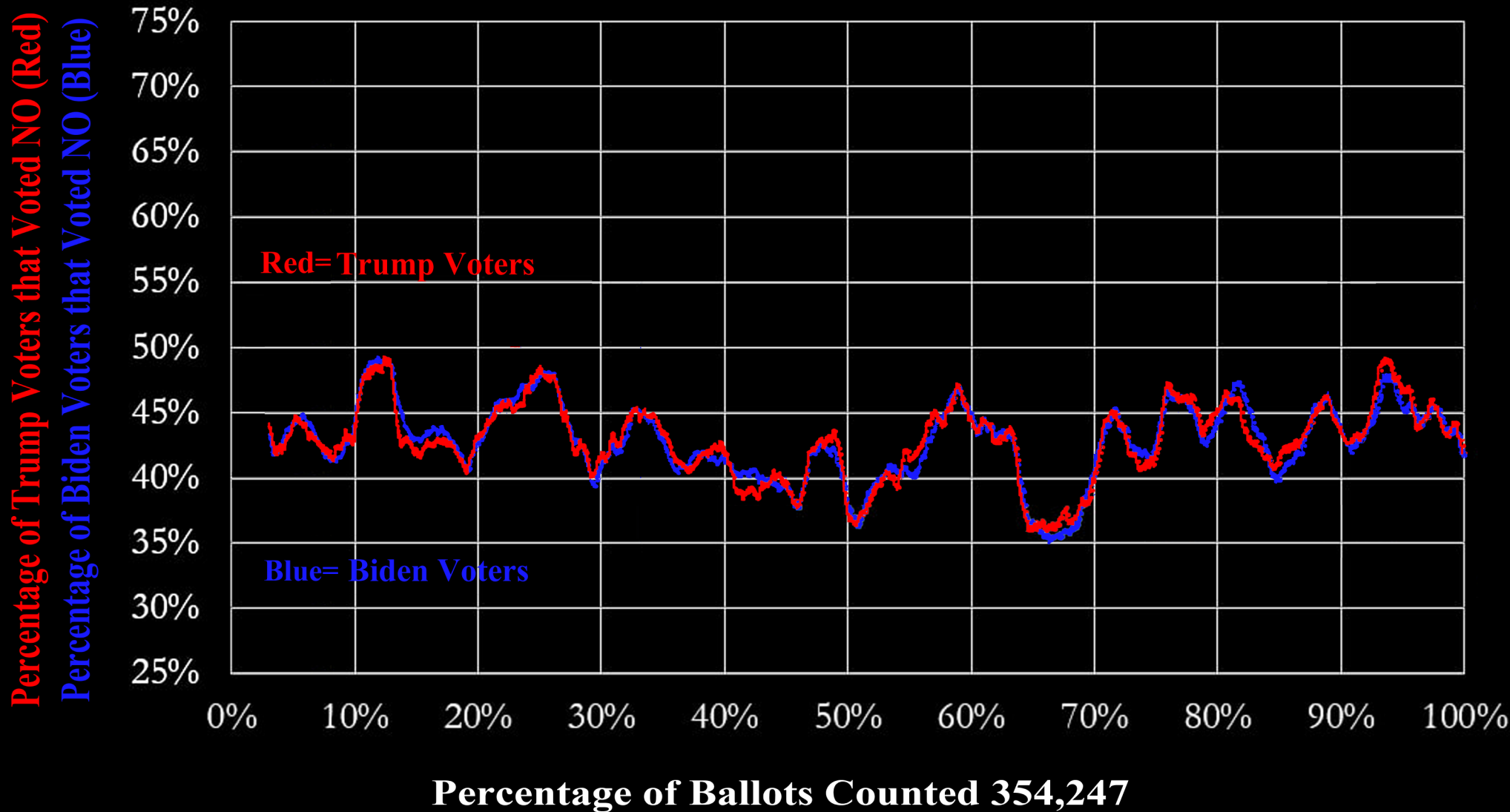
What proof is there that voter choices in the Arapahoe County cast vote record were manipulated in the 2020 election? The original 2020 cast vote record showed that Trump voters and Biden voters made nearly identical choices on the ballot issue to repeal the Gallagher Amendment (Proposition B). The graph in Exhibit 1 purports to show that Trump voters and Biden voters voted in lockstep against repeal of Proposition B. This is a statistical impossibility. It would be the same as if you flipped a coin 3,500 times and it came up heads each time.

What do graphs from other Colorado counties look like? Exhibit 2 shows the voter choices on Proposition B in El Paso County, Colorado CVR. More than 55% of Trump voters in El Paso voted against Proposition B, because they feared it would raise their property taxes (it did). Less than 35% of Biden voters voted against Proposition B.

Did Arapahoe County recently alter votes from the 2020 election? On April 2, 2025, Arapahoe County published a revised official CVR for the 2020 election. Exhibit 3 is a graph of voter choices in the newly published CVR. It looks very much like the El Paso County graph in Exhibit 2, suggesting it was created to conceal manipulation. Line-by-line comparison of the new CVR to the original CVR shows that someone altered votes. Exhibit 4 compares voter choices on 5 ballots in the original CVR, to voter choices for the same 5 ballots in the new CVR. You can see that the new CVR altered votes on three ballot records. Altering a vote on a ballot record is a crime.

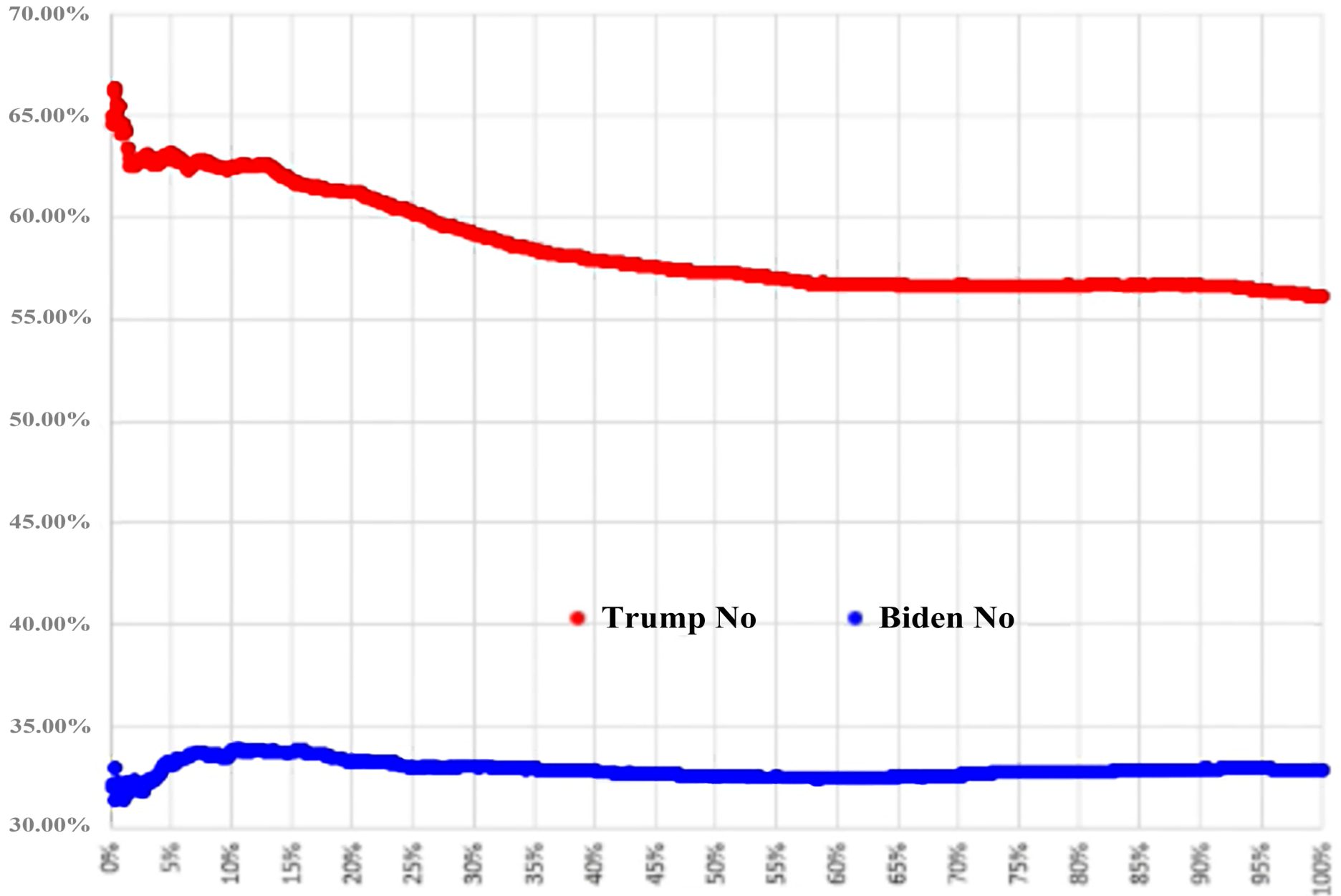
End Press Release

Arapahoe County 2020: Percentage of No Voters on Prop B - Original CVR

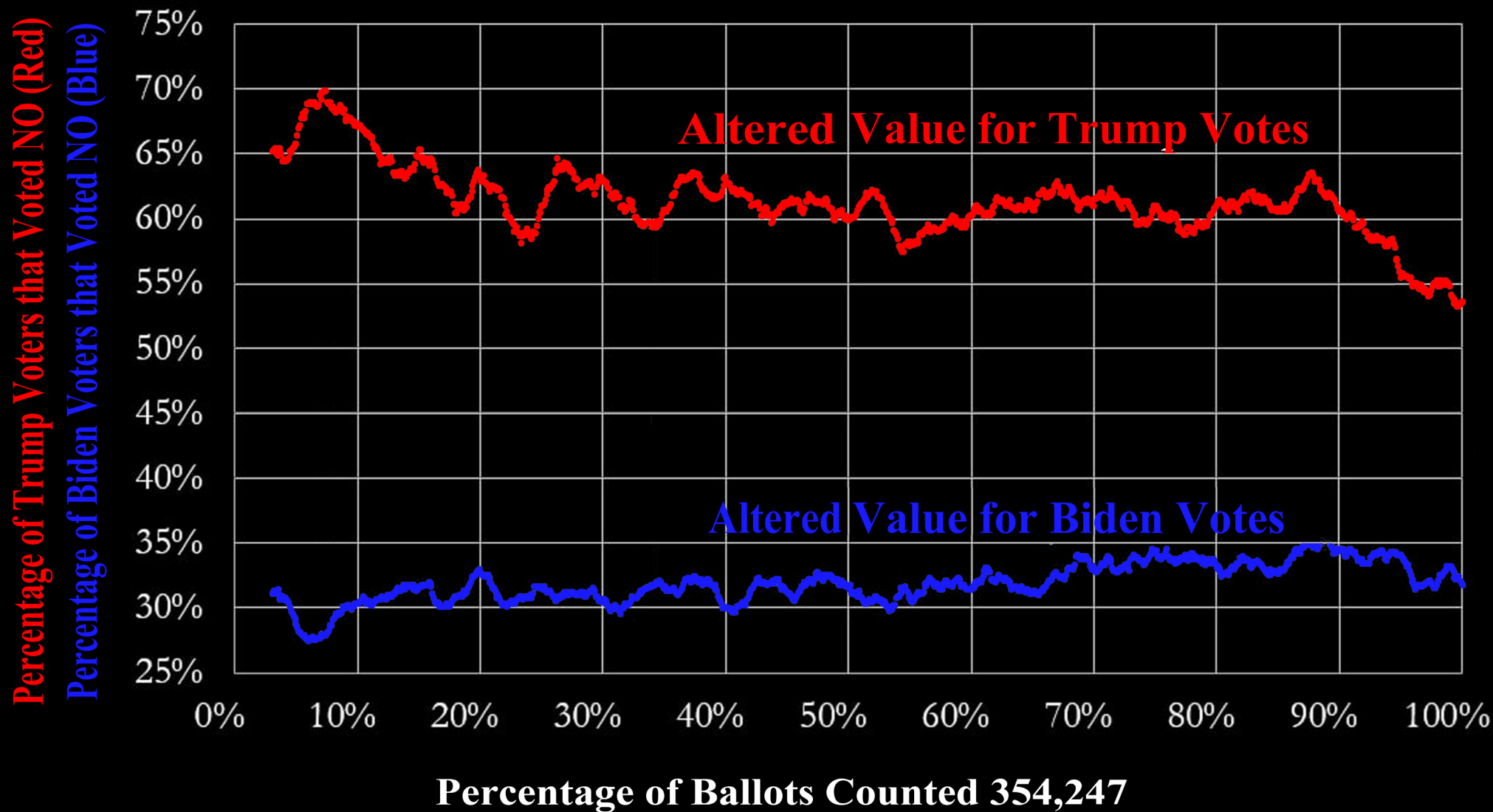


EL PASO 2020 - Percentage of NO votes on Prop B

Percentage of Trump Voters that voted NO (Red)
Percentage of Biden Voters that voted NO (Blue)



Arapahoe County 2020: Percentage of No Voters on Prop B -Altered CVR



2020 Arapahoe County General Election							
Which CVR	CvrNumber	President	President	Amendment B	Amendment B	Amendment C	Amendment C
		(Vote for = 1)	(Vote for = 1)	(Repeal Gallagher)	(Repeal Gallagher)	(Charitable Gaming)	(Charitable Gaming)
		BIDEN	TRUMP	YES/FOR	NO/AGAINST	YES/FOR	NO/AGAINST
2020	1	1	0	0	1	0	1
2025		1	0	0	1	0	1
2020	2	1	0	0	1	0	1
2025		1	0	1	0	1	0
2020	3	1	0	0	1	0	1
2025		1	0	1	0	0	1
2020	4	0	1	0	1	0	1
2025		0	1	0	1	0	1
2020	5	1	0	1	0	0	1
2025		1	0	1	0	1	0

REPORT ON ARAPAHOE COUNTY ELECTION LAW VIOLATIONS

Walter C. Daugherty, Editor

Updated May 25, 2025

EXECUTIVE SUMMARY

Newly discovered evidence in Arapahoe County, Colorado, election data appears to show violations of federal and state criminal laws. Specifically, the Arapahoe County Clerk and Recorder's Office has this year (2025) publicly posted a new list of the ballots cast in November 2020, which is startlingly different from the list of those ballots which they publicly posted in 2022, as canvassed, audited, and certified in 2020.

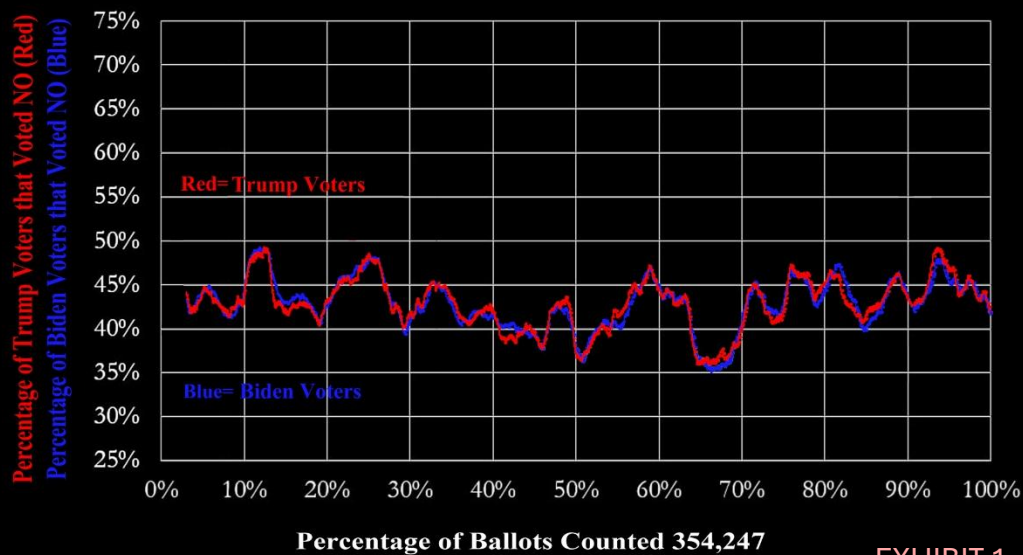
Needless to say, ballots should never be changed 5 years later; in fact, they should never be changed at all! Can you imagine the outrage if the 2020 Super Bowl score were to be changed 5 years later in 2025? The most egregious changes were to the down-ballot contests, notably the votes on Amendment B to repeal the Gallagher Amendment. It is generally considered that a "Yes" vote to repeal was expected to result in higher property taxes for homeowners, which conservative voters oppose and would therefore most likely vote "No," to not repeal. These same conservative voters are generally recognized as supporting Donald Trump over Joe Biden in the 2020 presidential race. Conversely, liberal voters are generally recognized as supporting Biden and most likely voting "Yes" to repeal.

Consequently, the percentage of Trump voters voting "No" on Amendment B should be high (well above 50%), and likewise the percentage of Biden voters voting "No" should be low (well below 50%). In other words, the percentages should be noticeably different; in fact, those percentages were indeed noticeably different in other Colorado counties' results for the 2020 election. However, in the November 2020 list of ballots for Arapahoe County, these two percentages were always below 50% and were almost identical, **FOR EVERY BLOCK OF CONSECUTIVE BALLOTS!**

For example, no matter what ballot number you start at, the next 10,000 or so ballots have almost identical "No" percentages for both Biden and Trump voters, which is statistically impossible and defies common sense. The chances of this happening in an honest election with over 350,000 ballots is infinitesimal, like flipping a coin 3,500 times in a row and getting heads every time.

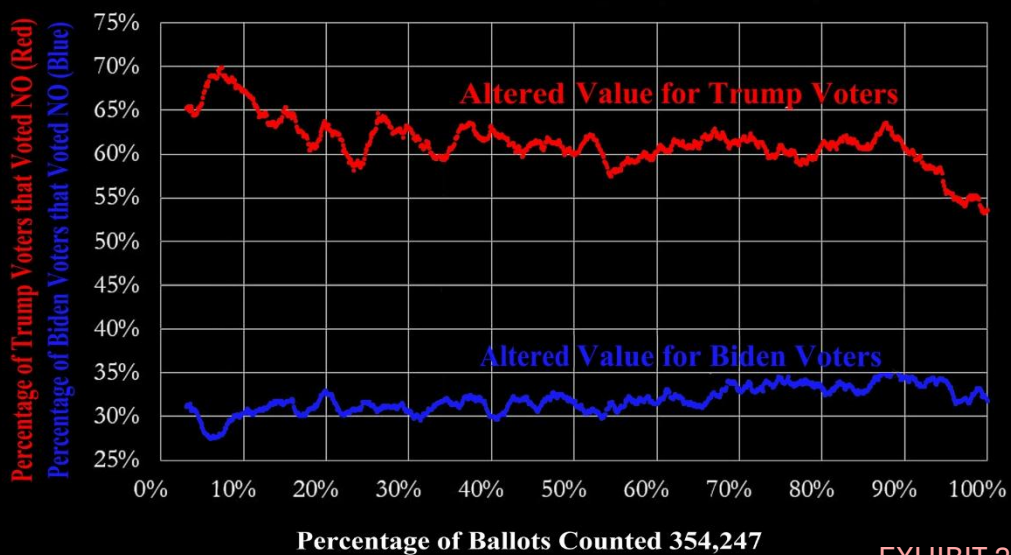
The original 2020 list of ballots (called a "Cast Vote Record") was publicly posted to the county website as an XLSX spreadsheet inside a ZIP file with the internal metadata indicating that the XLSX file was modified at 12:24 P.M. March 22, 2022. Exhibit 1 is a graph of the original CVR, which shows the impossible correlation between Biden and Trump voters voting against repeal of the Gallagher Amendment.

Arapahoe County 2020: Percentage of No Voters on Prop B - Original CVR

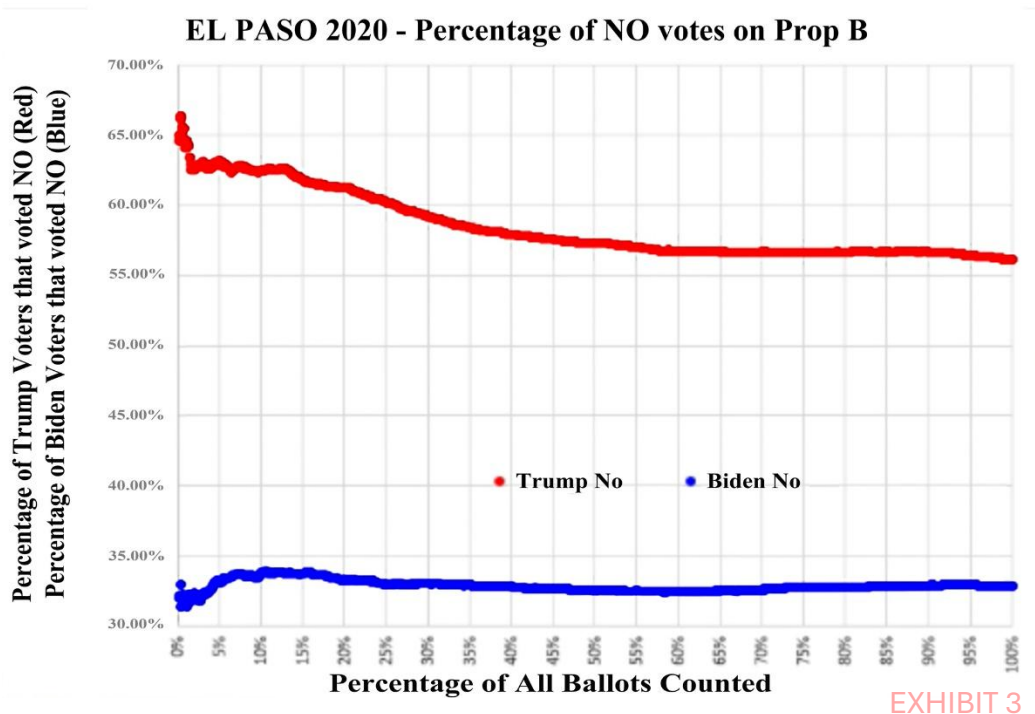


In contrast, the 2025 list of the “same” ballots, which was publicly posted to the county website as a CSV spreadsheet inside a ZIP file with the internal metadata indicating that the CSV file was modified at 9:26 A.M. February 20, 2025, ***CHANGES THE 2020 BALLOTS*** so that for every block of consecutive ballots the percentage of Trump voters voting “No” on Amendment B is always above 50%, and the percentage of Biden voters voting “No” on Amendment B is always below about 35%. Exhibit 2 is a graph of the new CVR.

Arapahoe County 2020: Percentage of No Voters on Prop B -Altered CVR



This is consistent for both conservative and liberal voters, and is more consistent with results from other Colorado counties, such as El Paso. Exhibit 3 is a graph of Biden vs. Trump voters in El Paso County in 2020.



These three exhibits raise the question as to who changed the 2020 Arapahoe County votes in the cast vote record to make them look consistent, and why.

Through CORA (Colorado Open Records Act) our team was able to determine who initiated this change. An Assistant Professor, Shiro Kuriwaki of Yale who received his Ph.D. from Harvard after the 2020 election, contacted the Arapahoe Elections Office and stated that the 2020 results “appear to be jumbled across columns, incorrectly representing voters’ choices.” Assistant Professor Kuriwaki pointed out that in the original CVR “a staggering 77%” of voters who voted for Republican Congressman Ken Buck also voted for Joe Biden, which was an obviously impossible result. He asked Arapahoe County to post a revised CVR on its website. Assistant Professor Kuriwaki’s complete letter is attached to this report as Exhibit 4.

According to the CORA request, it does not appear that the county consulted with either the Secretary of State’s office or the election machine vendor, Dominion, for how the issues Assistant Professor Kuriwaki was claiming to exist could have happened, nor did they seek review by any expert that was not recommended by Assistant Professor Kuriwaki.

Instead, Arapahoe County published a new CVR which altered votes on 354,242 ballot records. Exhibit 5 compares votes on five ballots in the original CVR to votes on the same five ballots in the new tampered CVR. You can see that votes on three of the five ballot records were altered.

2020 Arapahoe County General Election							
Which CVR	CvrNumber	President (Vote for = 1) BIDEN	President (Vote for = 1) TRUMP	Amendment B (Repeal Gallagher) YES/FOR	Amendment B (Repeal Gallagher) NO/AGAINST	Amendment C (Charitable Gaming) YES/FOR	Amendment C (Charitable Gaming) NO/AGAINST
2020	1	1	0	0	1	0	1
2025		1	0	0	1	0	1
2020	2	1	0	0	1	0	1
2025		1	0	1	0	1	0
2020	3	1	0	0	1	0	1
2025		1	0	1	0	0	1
2020	4	0	1	0	1	0	1
2025		0	1	0	1	0	1
2020	5	1	0	1	0	0	1
2025		1	0	1	0	1	0

EXHIBIT 5

After Assistant Professor Kuriwaki received the tampered CVR from Arapahoe County, he confirmed in an email that the tampered CVR was now “in line with what I would expect.” The full email is attached as Exhibit 6.

There was no confirmation of recounting of ballots or any additional audit measures conducted to ensure the accuracy of the actual counts. There is also no information at this time to explain why the initial, un-tampered CVR was not correct after the certification of the 2020 Elections by Arapahoe County.

Assistant Professor Kuriwaki advised the Arapahoe Elections staff to update their website with this new file, which the County did on February 28, 2025, per their internal emails. There was no notice to the public that this file had been changed. When a member of the public downloaded this tampered CVR and discovered that the file had been tampered with, County Clerk Joan Lopez posted an announcement on her website that the file had been changed and uploaded April 2, 2025. It is not clear why she would have offered this date, as it raises further questions concerning the honesty and intentions of the Arapahoe County Elections office.

Honest, transparent, and accurate elections are our foundational civil right, upon which all other rights depend. This newly discovered evidence calls into question if the civil rights of Arapahoe County and Colorado citizens have been violated. An immediate investigation by federal authorities is called for, to ensure justice is served and the electoral rights of Americans are protected.

STATEMENT OF FACTS

1. **CAST VOTE RECORD DEFINITION.** A “Cast Vote Record” or “CVR” records a single voter’s selections. In some voting systems there is a CVR for each page of a voter’s multipage ballot, while in other voting systems there is a single CVR for all pages of a voter’s entire ballot. The CVR Report then lists all of the CVRs in an election. Note that there is no personally-identifiable information in a CVR or CVR Report; it is simply a list of the choices made on the ballot(s). The CVR Report is often produced as a spreadsheet (XLSX or CSV), which is easy for the public to audit; other formats (such as JSON) include additional information and typically require more expertise to audit.

For reference, here are definitions of the term “Cast Vote Record” from the federal Election Assistance Commission (EAC), the National Institute of Standards and Technology (NIST), and Dominion Voting Systems (the vendor of the electronic voting equipment used in Colorado):

- a. EAC Glossary of Election Terminology: A permanent record of all votes produced by a single voter, whether in electronic, paper, or other form. They are also referred to as ballot images when used to refer to electronic ballots.
 - b. NIST SP 1500-103: A permanent record of all votes produced by a single voter, whether in electronic, paper, or other form. They are also referred to as ballot images when used to refer to electronic ballots.
 - c. CVR Export. The product and process, within Dominion Voting System Democracy Suite, of using the Election Management Server Results Tally & Reporting software to export a JSON, tabular, or comma/punctuation separated value data file containing tallied Cast Vote Records, with every row representing a single cast vote record, representing in aggregate the complete and accurate basis for reported election results.
2. **EVIDENCE.**
 - a. Tampered redacted CVR.

The “Elections and Voter Registration” menu item on Arapahoe County’s website (<https://www.arapahoeco.gov/>) links to <http://www.arapahoevotes.com/>, which in turn links to <https://www.arapahoevotes.gov/>. The “Transparency Info” button on that page links to <https://www.arapahoevotes.gov/transparency>. The “Certification and Recounts” tab on that page lists links to redacted CVRs, including the November 2020 election, whose link is to <https://www.arapahoevotes.gov/file/2020-general-election-redacted-cast-vote-record>.

That page in turn lists “[2020 General Election-Cast Vote Record - REDACTED.pdf](#)”

with a posting date of “Wed, 04/02/2025 - 12:00” which links to

[https://www.arapahoevotes.gov/sites/default/files/2025-04/2020 General Election-Cast Vote Record -REDACTED.pdf](https://www.arapahoevotes.gov/sites/default/files/2025-04/2020%20General%20Election-Cast%20Vote%20Record-REDACTED.pdf), which says “To access the Redacted

Cast Vote Record for the 2020 General Election, click here

(https://gis.arapahoegov.com/DL_Data/CR_VOTER_DATA/REDACTED_CVR/REDACTED_CVR_Export_20201130085221.zip).” Clicking that link downloads the ZIP file (done May 16, 2025), which contains a zipped version of a file named REDACTED_CVR_Export_20201130085221.csv which was created at 9:26 A.M. MST February 20, 2025. Unzipping the ZIP file extracts the CSV file, which is the CVR.

THIS IS THE 2025 CVR WHICH CHANGED ALMOST ALL THE 2020 BALLOTS IN THE CVR.

In all, 354,242 ballots out of 354,247 ballots were changed, with an average of about 45 changes per ballot, a grand total of 15,824,590 changes. This incomprehensible volume of changes in 2025 to the 2020 ballots demonstrates that there was something very wrong with the 2020 CVR, which will be discussed below in the section entitled “Discrepancies.”

Note that the extremely complex process just described to find the file

- i. makes it prohibitively difficult for the average voter to find this file on the county website, and
- ii. prevents the file from being backed up by <https://archive.org>, the “Wayback Machine” internet archive.

These consequences are the opposite of transparency, so it is ironic that the county calls this “Transparency Info.”

b. Original redacted CVR.

Using the same path as the previous ZIP file, the original CVR was found at https://gis.arapahoegov.com/DL_Data/CR_Voter_Data/Redacted_CVR/Redacted_CVR_Export.zip on May 16, 2025. That link downloads the ZIP file, which contains a zipped version of a file named REDACTED_CVR_Export_20201130085221_354247.xlsx which according to the internal XLSX metadata was originally created at 5:00 P.M. UTC December 10, 2020, by Arapahoe County Elections Manager Corene Henage, and modified (redacted) at 12:24 P.M. MDT March 22, 2022.

THIS IS THE ORIGINAL 2020 CVR POSTED BY THE COUNTY, REDACTED IN 2022, WHICH WAS THEN REPLACED IN 2025 WITH AN ENTIRELY NEW FILE.

A search was made on May 16, 2025, for this file at <http://archive.org/>, the “Wayback Machine” internet archive, which showed a backup of the zip file https://gis.arapahoegov.com/DL_Data/CR_Voter_Data/Redacted_CVR/Redacted_CVR_Export.zip had been archived May 31, 2022, and could be downloaded on May 16, 2025.

However, as of 7:55 P.M. CDT the next day, May 17, 2025, it is no longer downloadable from <https://archive.org>. Such concealment is problematic, to block the public from downloading the publicly available backup. Arapahoe County should immediately restore public access to this internet backup file.

c. Discrepancies.

Since there are two different CVRs purporting to be the 2020 CVR, they obviously cannot both be correct. That indicates that **ONE OR BOTH OF THESE CVRS IS INCORRECT**. When the 2020 CVR was examined for cross-tabulation contingencies (commonly called “crosstabs”), it was discovered that the ballot choices reported there were impossibly inconsistent.

The most obvious changes were to the down-ballot contests, notably the votes on Amendment B to repeal the Gallagher Amendment. It is generally considered that a “Yes” vote to repeal was expected to result in higher property taxes for homeowners, which conservative voters oppose and would therefore most likely vote “No,” to not repeal. These same conservative voters are generally recognized as supporting Donald Trump over Joe Biden in the 2020 presidential race. Conversely, liberal voters are generally recognized as supporting Biden and most likely voting “Yes” to repeal.

Consequently, the percentage of Trump voters voting “No” on Amendment B should be high (well above 50%), and likewise the percentage of Biden voters voting “No” should be low (well below 50%). In other words, the percentages should be noticeably different; in fact, those percentages were indeed noticeably different in other Colorado counties’ results for the 2020 election. However, in the November 2020 list of ballots for Arapahoe County, these two percentages were always below 50% and were almost identical, **FOR EVERY BLOCK OF CONSECUTIVE BALLOTS!**

That is, no matter what ballot number you start at, the next 10,000 or so ballots have almost identical “No” percentages for both Biden and Trump voters, which is statistically impossible and defies common sense. The chance of this happening in an honest election with over 350,000 ballots is infinitesimal, like flipping a coin 3,500 times in a row and getting heads every time. (Note: This is the 2020 CVR which according to the XLSX metadata was modified at 12:24 P.M. MDT March 22, 2022, and publicly posted to the county website as an XLSX spreadsheet.)

Once Arapahoe County was notified that the 2020 CVR was not believable, on May 13, 2025, the county posted the following peculiar notice at [https://www.arapahoevotes.gov/sites/default/files/2025-05/DOC Statement RE 2020 CVR 20250513.pdf](https://www.arapahoevotes.gov/sites/default/files/2025-05/DOC%20Statement%20RE%202020%20CVR%20250513.pdf):



ARAPAHOE COUNTY—On or about Oct. 29, 2024, Mr. Shiro Kuriwaki, an assistant professor at Yale University, notified the Clerk and Recorder's Office that he suspected there were errors in the published 2020 General Election cast vote record, suggesting the errors were likely due to mistakes made during the redaction process. Arapahoe County election staff conducted a review that confirmed Mr. Kuriwaki's hypothesis and performed a new redaction of the original (unredacted) cast vote record, then uploaded the corrected CVR to www.ArapahoeVotes.gov on or about April 2, 2025.

First, “redaction” is the removal or obscuring of data, not changing data. For example, removing the “Counting Group” column (as the county did) is a redaction. Blacking out data would also be a redaction. The vote changes per ballot were not “redaction” as Assistant Professor Kuriwaki’s letter to Arapahoe County explicitly stated that his intention was to change the “ticket-splitting”, or the relationship of the votes on the Presidential Race to the votes in the down-ballot races. This was obviously achieved by the tampering.

However, changing a vote on Amendment B and other contests, as was done, is not a redaction; it is an alteration, which is prohibited by law. In total there were changes to votes on 354,242 ballot records in the CVR.

The statement that the 2025 CVR is a “corrected” one is manifestly false, since some ballots in the 2025 CVR have been changed to different congressional districts. If the congressional district for a precinct split was wrong in 2020, then changing it in 2025 is absurd, since the “wrong” district is what was voted on according to the original CVR.

The county admitted in the statement above that the original 2020 CVR was incorrect. But the “correction” published in 2025 altered votes on 354,242 ballot records in the original CVR, so the new CVR cannot possibly be legitimate.

Note that the “Risk-Limiting Audit” which Arapahoe County performed on the 2020 election as prescribed by the Colorado Secretary of State ***DID NOT DETECT*** multiple issues, one being the inconsistencies on Amendment B described above.

By the nature of their design, risk-limiting audits do not consider the sequence votes are tabulated, and thus they **CANNOT DETECT** sequence-dependent manipulations in general, including for example the different type of sequence-dependent manipulation observed in Maricopa County, Arizona, and elsewhere. Thus risk-limiting audits alone are insufficient to assure the CVR is accurate.

Following the above analysis, it was discovered that the first 40 columns had been selected and shuffled. This disjointed the votes on the races for President and U.S. Senate from the down-ballot races and removed the effect of the Trump and Biden voters' abnormal pattern on Amendment B, as discussed above. There is no legitimate reason for these changes.

COUNTERARGUMENTS

1. One possible counterargument to mitigate the conclusion that both the 2020 CVR and the 2025 CVR are incorrect is that the extreme errors are due to clerical mistakes. This seems to be advanced in the county's statement above that "Arapahoe County election staff conducted a review that confirmed Assistant Professor Kirowaki's [sic] hypothesis that "the errors were likely due to mistakes made during the redaction process."

As noted above, redaction is the removal or obscuring of data, not changing data. If the county made errors redacting data, they could not correct it by altering votes on ballot records in the CVR. Their process should be fully explained and the creation of both the incorrect and correct CVR's should be witnessed by Law Enforcement personnel.

2. A second possible counterargument is that there was some (undescribed) technical issue (the infamous "glitch") at fault, for example, that the Election Management Server was backed up but restoring the 2020 files from the backup failed. This is not credible since the county explicitly said they (in 2025) still had access to "the original (unredacted) cast vote record."
3. A third possible counterargument is that the county's so-called redactions were necessary to preserve ballot secrecy. Again, genuine redaction does not change votes, which would violate federal law. Further, it is well established that auditability of elections trumps ballot secrecy. If an election cannot be audited (and auditability is required by Federal Law 52 U.S. Code § 21081) and shown to be accurate, then it is useless, because the results are unreliable. In certain rare circumstances auditability may impact ballot secrecy (which is also required by law), but in that case auditability of elections again trumps ballot secrecy. See <https://x.com/ZoomWalter/status/1895869759381451106> for a detailed analysis of this issue.

4. None of the foregoing possible counterarguments is sustainable, for the reasons stated here.

RELEVANT CONSTITUTIONAL PROVISIONS

U.S. Constitution Article 4, Section 4. Guarantees every state a republican form of government, which necessarily includes free and fair elections which are transparent, auditable, and accurate.

U.S. Constitution 14th Amendment. Equal Protection and Due Process – All voters are entitled to have their votes accurately counted, reported, and preserved. “The right to vote is protected as a fundamental right under the Equal Protection Clause. A state may not value one person's vote over another. Any election process that lacks uniform standards or permits arbitrary vote dilution violates due process.” ***Bush v. Gore, 531 U.S. 98, 104-105 (2000).***

POTENTIAL CRIMINAL VIOLATIONS

Federal Criminal Statutes:

18 USC § 1512

c) Whoever corruptly—

(1) alters, destroys, mutilates, or conceals a record, document, or other object, or attempts to do so, with the intent to impair the object's integrity or availability for use in an official proceeding;

shall be fined under this title or imprisoned not more than 20 years, or both.

18 USC § 2071

(b) Whoever, having the custody of any record, proceeding, map, book, document, paper, or other thing, willfully and unlawfully conceals, removes, mutilates, obliterates, falsifies, or destroys such thing, shall be fined under this title or imprisoned not more than three years, or both.

Colorado Criminal Statutes

CRS § 1-13-716. (1) No person shall willfully destroy, deface, or alter any ballot or any election records.

CRS § 18-8-114. Abuse of public records

(1) A person commits a class 2 misdemeanor if:

(a) The person knowingly makes a false entry in or falsely alters any public record.

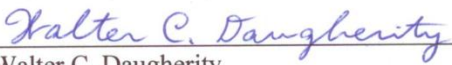
RECOMMENDED INVESTIGATIVE ACTIONS

1. Preservation of all election records, including but not limited to all digital artifacts from voting systems and the original hard drives, by all Colorado counties, Colorado Secretary of State, Dominion Voting Systems, Clarity Elections, SOE Software, Scytl, Comitia and any other vendor of software products used within the election process.
2. Preservation of all communications regarding preservation of election records, records administration of county and state websites and records storage services/functions by all Colorado counties, Colorado Secretary of State, Dominion Voting Systems, Clarity Elections, SOE Software, Scytl, and Comitia and any data and communications concerning that data between Assistant Professor Kuriwaki, Professor Lewis, and Arapahoe County (in any combination of paths).
3. Identify individuals with access to and responsible for creation/modification of Arapahoe County URLs identified above, posted URLs, and county-owned or county-controlled or county-contracted websites.
4. Obtain from Arapahoe County the original CVR export(s) with time stamps and complete chain of custody including hash validation which were used for:
 - a. 2020 election Risk-Limiting Audit.
 - b. 2020 election certification.
 - c. 2020 election project backup.
 - d. Original public transparency posting.
 - e. Latest public transparency posting.
5. Obtain from Arapahoe County all original batch and manifest files from all Dominion tabulators, in JSON format, with time stamps and complete chain of custody including hash validation.
6. Obtain from Arapahoe County all ballot images, with time stamps and complete chain of custody including hash validation.
7. Obtain from Arapahoe County the “permanent paper record with a manual audit capacity” required by federal law 52 U.S. Code § 21081.
8. Compare the above records with one another.

CONCLUSIONS

1. The Arapahoe County official CVR for the 2020 election, redacted in 2022, is not plausible.
2. Arapahoe County’s new 2025 version of the 2020 CVR altered votes on 354,242 ballot records in the official CVR by means of directed shuffling of the Federal Election votes.
3. Altering votes in election records is a crime.
4. An immediate investigation by Federal authorities is called for.

To the best of my knowledge and belief, this report is true and accurate.


Walter C. Daugherty

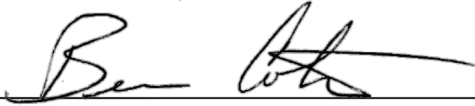
Senior Lecturer Emeritus, Dept. of Computer Science & Engineering, Texas A&M University

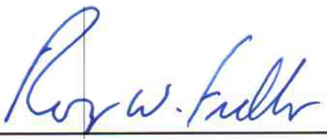
Date: May 26, 2025

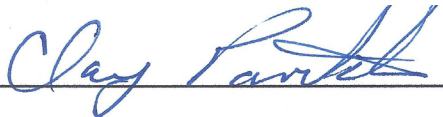
CONCURRING EXPERTS

We, the undersigned experts, concur with this report and agree with its conclusions.

Signature:  Date: 2025-05-26
Mark Cook
IT and Cybersecurity Expert Specializing in Election System Forensics

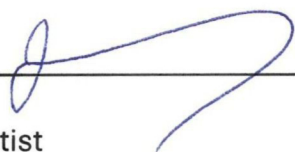
Signature:  Date: 26 May 2025
Ben Cotton, CISSP
Cybersecurity Expert

Signature:  Date: MAY 26, 2025
Roger W. Fuller, MSEE Microchip and Computer Aided Design
Software Engineer

Signature:  Date: 26 May 2025
Clay Parikh
Cybersecurity and Electronic Voting Systems Expert

Signature:  Date: 5/26/2025
Lisa (Draza) Batsch-Smith, P.E., MsEE, MSCpE
Control Systems Engineer

Signature:  Date: 26 May 25
Col. (Ret.) Shawn Smith
National Security/Threat/Election Systems Analyst

Signature:  Date: 5-26-25
Jeff Young
Data Scientist

SHIRO KURIWAKI
Assistant Professor

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courier
77 Prospect Street
New Haven CT 06511

October 29, 2024

Arapahoe County Clerk and Recorder's Office

Dear Ms. Lopez,

I am a researcher with expertise in studying cast vote records and ticket-splitting. I write concerning the 2020 cast vote record (CVR) posted on your website. I am aware that this is an extremely busy time for your office, given the upcoming election, but I write with the hope that identifying this issue may help your office improve your CVR redaction method moving forward.

My collaborators and I have examined the November 2020 General Election "Redacted CVR" available on your website at <https://www.arapahoevotes.gov/transparency> (the tab called "CERTIFICATION AND RECOUNTS"), which is named REDACTED_CVR_Export_20201130085221_354247.xlsx (139 MB).

Even though these records indicate the *correct* number of *total* votes for each candidate, the rows appear to be jumbled across columns, incorrectly representing voters' choices.

For example, the spreadsheet indicates that Donald Trump won 127315 votes and Ken Buck (US Representative of Colorado's 4th District) won 3885 votes. This is all consistent with your official certified election results. However, the spreadsheet also indicates that among the 3885 of those voting for Ken Buck (R), a staggering 77% of them – 2986 voters – voted for the Democrat, Joe Biden (D). This degree of ticket-splitting is inconsistent with the rest of the cast vote records in Colorado (See Exhibit 1 for the first few rows).

Is it possible that rows of the spreadsheet were mixed up in preparing the redacted spreadsheet? If so, would it be possible to post a corrected version?

I consulted with Neal McBurnett, who is much more familiar with the details of Colorado elections than I am. He suspects that the error was likely produced in the redaction process. I checked the pre-redaction audit center [sample](#) of the same election, and verified that the audit samples show reasonably low levels of ticket-splitting, for example in CO-06 (see Exhibit 2).

These 2020 relationships are inconsistent with your county's records from other elections. In the November 2022 CVR I obtained from the same website, only 6% of

Exhibit 4

those who voted for Ken Buck voted for the Democratic Senator, Michael Bennet. This is a much more plausible number.

My research aims to contribute to the election administrator community, and I am a regular attendee at the Election Science, Reform and Administration Conference (<https://www.shirokuriwaki.com/>). As I mentioned, I do not wish to disrupt your work but only write to be helpful. I would love to work with you so as not to interfere with the integral work that you do for Arapahoe County.

Best,
Shiro

Shiro Kuriwaki



Exhibit 1: Sample of Spreadsheet. I have colored the cells and hidden some columns to highlight the irregular discrepancy between the President and the US House race.

	A	B	C	D	E	F	G	H	I	J	AV	AW	
1	2020 Arapahoe Cou 5.11.3.1												
2									President al Electors (Vote For=1)	President al Electors (Vote For=1)	United States Congress- District 4 (Vote)	Represent ative to the 117th United States Congress- District 4 (Vote)	
3									Joseph R. Biden / Kamala D. Harris	Donald J. Trump / Michael R. Pence	Ike McCorkle	Ken Buck	
4	CvrNumber	Tabulat	Batch	Recon	Imprin	Count	Precinct	Portion	BallotType	DEM	REP	DEM	REP
5	1	4	1	50	4-1-50	Mail	1260303140	(1260303140 - 44)	44	1	0	1	0
6	2	4	1	33	4-1-33	Mail	6260303128	(6260303128)	62	1	0	1	0
7	3	4	1	32	4-1-32	Mail	1260303136	(1260303136)	33	1	0	0	1
8	4	4	1	23	4-1-23	Mail	1260303113	(1260303113 - 41)	41	0	1	1	0
9	5	4	1	17	4-1-17	Mail	1260303133	(1260303133)	33	1	0	0	1
10	6	4	1	8	4-1-8	Mail	1260303131	(1260303131)	33	0	1	0	1
11	7	4	1	2	4-1-2	Mail	6263803176	(6263803176)	43	1	0	0	1
12	8	4	1	73	4-1-73	Mail	1260303109	(1260303109)	39	1	0	1	0
13	9	4	1	72	4-1-72	Mail	6260303162	(6260303162)	61	1	0	0	1
14	10	4	1	45	4-1-45	Mail	6294203512	(6294203512)	29	1	0	0	1
15	11	4	1	44	4-1-44	Mail	6263803159	(6263803159)	43	1	0	1	0
16	12	4	1	35	4-1-35	Mail	1260303134	(1260303134)	33	1	0	0	1
17	13	4	1	34	4-1-34	Mail	1260303133	(1260303133)	33	1	0	1	0
18	14	4	1	18	4-1-18	Mail	1260303113	(1260303113 - 41)	41	1	0	0	1
19	15	4	1	9	4-1-9	Mail	1260303131	(1260303131)	33	1	0	0	1
20	16	4	1	6	4-1-6	Mail	1260303133	(1260303133)	33	1	0	0	0
21	17	4	1	95	4-1-95	Mail	1260303122	(1260303122)	39	0	1	0	1
22	18	4	1	94	4-1-94	Mail	6293603381	(6293603381)	17	0	1	0	1
23	19	4	1	93	4-1-93	Mail	6293603381	(6293603381)	17	0	1	0	0
24	20	4	1	92	4-1-92	Mail	6263803150	(6263803150 - 43)	43	1	0	0	1
25	21	4	1	79	4-1-79	Mail	6263803176	(6263803176)	43	1	0	0	1
26	22	4	1	78	4-1-78	Mail	6273803190	(6273803190)	65	1	0	0	1
27	23	4	1	63	4-1-63	Mail	6263803155	(6263803155)	43	1	0	0	0
28	24	4	1	62	4-1-62	Mail	6263803150	(6263803150 - 43)	43	1	0	0	1
29	25	4	1	49	4-1-49	Mail	6263803165	(6263803165)	43	1	0	0	1
30	26	4	1	24	4-1-24	Mail	1310903137	(1310903137)	31	1	0	0	0
31	27	4	1	12	4-1-12	Mail	1260303132	(1260303132 - 33)	33	1	0	0	1
32	28	4	1	5	4-1-5	Mail	1260303133	(1260303133)	33	1	0	0	1
33	29	4	1	87	4-1-87	Mail	6263803168	(6263803168)	43	0	1	0	0
34	30	4	1	86	4-1-86	Mail	6263803163	(6263803163)	43	1	0	0	1
35	31	4	1	85	4-1-85	Mail	6263803158	(6263803158)	43	1	0	0	1
36	32	4	1	84	4-1-84	Mail	6263803171	(6263803171)	43	0	1	0	1
37	33	4	1	57	4-1-57	Mail	6263803145	(6263803145)	60	1	0	0	1

Exhibit 4

Exhibit 2: Audit sample compared to Full Data

Each table here is a cross-tabulation. Each cell represents the number of voters who voted for both of the two candidates identified in rows and columns. For example, the “152” number in the left table indicates that in the audit sample, 152 ballots voted for both Biden and Crow, the Democratic House candidate for CO-06. I have limited my analysis to the 6th district.

Audit Sample (appears correct)

Audit Sample				
President Choice	US House Choice			
	Crow (D)	House (R)	Olsen (Lbt)	NA
Joseph R. Biden	152	6	2	7
Donald J. Trump	5	103	1	5
Other	0	3	2	0

Note: Only a small fraction of voters appears to have split their ticket, in line with past Colorado elections and national evidence.

Posted online (appears incorrect)

Redacted CVR Posted Online				
President Choice	US House Choice			
	Crow (D)	House (R)	Olsen (Lbt)	Other
Biden (D)	111,430	68,150	3,800	7,342
Trump (R)	66,123	41,434	2,272	4,275
Other	7,036	4,407	240	433

Note: This table implies that more Trump voters voted for the Democratic candidate (Jason Crow, 66,123) than the Republican candidate (Steven House, 41,434), suggesting the data was missorted.

Exhibit 6

O: 303-734-5465

Arapahoeco.gov

[Facebook](#) | [Twitter](#) | [Instagram](#) | [Nextdoor](#) | [YouTube](#)



From: Kuriwaki, Shiro <shiro.kuriwaki@yale.edu>

Sent: Tuesday, March 11, 2025 4:26 PM

To: Tom Skelley <TSkelley@arapahoegov.com>

Cc: William Mast <WMast@arapahoegov.com>; Karl Herrmann <KHerrmann@arapahoegov.com>;
Joan M. Lopez <JLopez@arapahoegov.com>

Subject: Re: Letter about the 2020 redacted cast vote record

Hi Tom,

I had taken a look at the redacted version you sent me, and the ticket splitting in the few contests I looked at were in line with what I would expect. Thank you again for looking in to my initial inquiry.

I was wondering if you plan to update your website with this revised dataset, and if you have any news on getting the use agreement for me to sign?

Thank you,

Shiro

--

Shiro Kuriwaki
Assistant Professor, Yale University
Department of Political Science
www.shirokuriwaki.com

From: Tom Skelley <TSkelley@arapahoegov.com>

Date: Tuesday, February 25, 2025 at 4:20 PM

To: Kuriwaki, Shiro <shiro.kuriwaki@yale.edu>

Cc: William Mast <WMast@arapahoegov.com>, Karl Herrmann
<KHerrmann@arapahoegov.com>, Joan M. Lopez <JLopez@arapahoegov.com>

EXHIBIT A

Curriculum Vitae of Walter C. Daugherty

Walter C. Daugherty
10895 Lakefront Drive
College Station, TX 77845
(979) 845-1308 (Office)
Walter.Daugherty@post.Harvard.edu

EDUCATION

Ed.D., Mathematical Education, Harvard University, Cambridge, Massachusetts, 1977.
Dissertation: "On the Ordering of Topics in the Teaching of Mathematics."
Advisor: Marc Lieberman.

M.A.T., Mathematics, Harvard University, Cambridge, Massachusetts, 1967 (age 20).

B.S., Mathematics, Oklahoma Christian College, Oklahoma City, Oklahoma, 1966 (3 years). Minors: Physics and chemistry, German.

EXPERIENCE

1973 to present	Daugherty Brothers, Inc., (Computer consultants), Bethany, Oklahoma. Co-founder, chairman, and president. Clients include IBM Federal Systems Division, New York Times, Washington Post, Los Angeles Times, Cheyenne and Arapaho Tribes of Oklahoma, Southwestern Bell Telephone, Fulbright & Jaworski (Houston), Texas Department of Agriculture, Phonogram B.V. (Amsterdam), and U. S. Customs Service.
1987 to present	Texas A & M University, College Station, Texas. Visiting Assistant Professor/Senior Lecturer/Senior Lecturer Emeritus, Departments of Computer Science and Engineering and Electrical and Computer Engineering, College of Engineering.
1989-91	Texas A & M University System, College Station, Texas. Director, Knowledge Systems Research Center, Computer Science Division of the Texas Engineering Experiment Station.

1984-87	Blinn College, Brenham, Texas. Computer science instructor. Part-time 1984-86, full-time 1986-87.
1978-80	Rose State College, Midwest City, Oklahoma. Data processing instructor (part-time).
1971-73	ECRM, Bedford, Massachusetts. Systems programmer.
1970-71	Harvard Computing Center, Cambridge, Massachusetts. Telecommunications specialist.
1969-70	Computer-Aided Instruction Laboratory, Harvard University, Cambridge, Massachusetts. Systems programmer.
1968-70	Harvard University, Division of Engineering and Applied Physics, Cambridge, Massachusetts. Teaching fellow (for George Mealy and Thomas Bartee).
1967	Driscoll Junior High School, Brookline, Massachusetts. Mathematics teacher.
1967	University of Oklahoma Medical Center Computing Facility, Oklahoma City, Oklahoma. Programmer.
1966	University of Central Oklahoma Data Processing Center, Edmond, Oklahoma. Programmer.
1965	Oklahoma Christian University of Science and Arts, Oklahoma City, Oklahoma. Statistical programmer.
1963	University of Oklahoma Computer Center, Norman, Oklahoma. Lab instructor.

RESEARCH AND DESIGN

1. Refereed Publications

Daughterity, W. C., and Kish, L. B., “More on the Reference-Grounding-Based Search in Noise-Based Logic,” *Fluctuation and Noise Letters*, Vol. 21, No. 3, 2250023, 2022.

Kish, L. B., and Daughterity, W. C., “Entanglement, and Unsorted Database Search in Noise-Based Logic,” *Applied Sciences*, Vol. 9, No. 15, 3029, 2019.

Kish, L. B., and Daugherty, W. C., "Noise-Based Logic Gates by Operations on the Reference System," *Fluctuation and Noise Letters*, Vol. 17, No. 4, 1850033, 2018.

Daugherty, W. C., and Coulson, R. N., "Knowledge Engineering for Sustainable Agriculture Management," *Proceedings of ICAST 2001 Conference* (Beijing, China, November 2001), 2:266, 2001.

Coulson, R. N., Saarenmaa, H., Daugherty, W. C., Rykiel, E. J., Saunders, M. C., and Fitzgerald, J. W., "A Knowledge System Environment for Ecosystem Management," book chapter in Klopatek, J. and Gardner, R. (eds.), *Landscape Ecological Analysis: Issues and Applications*, Springer-Verlag, 57-79, 1999.

Coulson, R. N., Daugherty, W. C., Rykiel, E. J., Saarenmaa, H., and Saunders, M. C., "The Pragmatism of Ecosystem Management: Planning, Problem Solving and Decision Making with Knowledge-Based Systems," *Proceedings of Eco-Informa '96 Global Networks for Environmental Information Conference* (Lake Buena Vista, Florida, November 1996), 10:342-50, 1996.

Coulson, R. N., Fitzgerald, J. W. *, Daugherty, W. C., Oliveria, F. L., and Wunneburger, D. F., "Using Spatial Data for Integrated Pest Management in Forest Landscapes," *Proceedings of the 11th Conference on Geographic Information Systems: Integrating Spatial Information Technologies for Tomorrow* (Vancouver, British Columbia, Canada, 1997).

Daugherty, W. C.; Harris, C. E., Jr.; and Rabins, M. J., "Introducing Ethics and Professionalism in REU Programs," *Proceedings of the 1995 World Conference on Engineering Education* (Minneapolis, Minnesota, October 1995).

Coulson, R. N., Daugherty, W. C., Vidlak, M. D. *, Fitzgerald, J. W. *, Teh, S. H. *, Oliveria, F. L., Drummond, D. B., and Nettleton, W. A., "Computer-based Planning, Problem Solving, and Decision Making in Forest Health Management: An Implementation of the Knowledge System Environment for the Southern Pine Beetle, ISPBEX-II," *Proceedings of the IUFRO Symposium on Current Topics in Forest Entomology* (Maui, Hawaii), 1995.

Yen, J., Daugherty, W. C., Wang, H. *, and Rathakrishnan, B. *, "Self-Tuning and Self-Learning Fuzzy Systems," book chapter in Yen, J., Langari, R., and Zadeh, L. (eds.), *Industrial Applications of Fuzzy Logic and Intelligent Systems*, IEEE Press, 1995.

* Graduate Research Assistant I funded

Daughterity, W. C., Video review of *Introduction to Biological and Artificial Neural Networks for Pattern Recognition*, by Steven K. Rogers, in *IEEE Transactions on Neural Networks*, Vol. 5, No. 5, 1994.

Teh, S. H. *, Daughterity, W. C., and Coulson, R. N., "A User-Centric Methodology for Building Usable Expert Systems," *Proceedings of the 7th International Conference on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems* (Austin, Texas, May-June 1994), 45-48, 1994.

Daughterity, W. C., "A Neural-Fuzzy System for the Protein Folding Problem," *Proceedings of the Third International Workshop on Industrial Fuzzy Control & Intelligent Systems (IFIS '93)* (Houston, Texas, December 1993), 47-49, 1993.

Daughterity, W. C., "A Partially Self-Training System for the Protein Folding Problem," *Proceedings of the World Congress on Neural Networks (WCNN '93)*, (Portland, Oregon, July 1993). Invited paper.

Yen, J., Wang, H. *, and Daughterity, W. C., "Design Issues of Reinforcement-Based Self-Learning Fuzzy Control," *Proceedings of the World Congress on Neural Networks (WCNN '93)*, (Portland, Oregon, July 1993).

Daughterity, W. C., "Characterizations of Fuzzy Operations," *Proceedings of the Second International Workshop on Industrial Fuzzy Control & Intelligent Systems* (College Station, Texas, December 1992), 234, 1992.

Yen, J., Wang, H. *, and Daughterity, W. C., "Design Issues of a Reinforcement-Based Self-Learning Fuzzy Controller for Petrochemical Process Control," *Proceedings of North American Fuzzy Information Processing Society* (Puerto Vallarta, December 1992), 1992.

Yen, J., Wang, H. *, and Daughterity, W. C., "An Adaptive Fuzzy Controller with Application to Petroleum Processing," *Proceedings of IFAC Workshop on Intelligent Manufacturing Systems* (Dearborn, October 1992), 1992.

Yen, J., Daughterity, W. C., and Rathakrishnan, B. *, "Fuzzy Logic and Its Application to Process Control," *Proceedings of CAPA Technology Conference* (Houston, May 1992), 78-86, 1992.

* Graduate Research Assistant I funded

Daughterity, W. C., Rathakrishnan, B. *, and Yen, J., "Performance Evaluation of a Self-Tuning Fuzzy Controller," *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)* (San Diego, March 1992), 1992.

Daughterity, W. C., "An Application of Geometrical Reasoning to a Combinatorial Problem," *Proceedings of the Seventh Annual Conference on Applied Mathematics* (Edmond, Oklahoma, April 1991), pp. 226-232, 1991.

Daughterity, W. C., Review of *Data Communications Dictionary*, by Charles J. Sippl, in *Computing Reviews*, Vol. 17, No. 9, pp. 335-336, 1976.

Daughterity, W. C., "Circuits for Dial-up and Local Use of a Stand-alone PDP-8," *Proceedings of the Digital Equipment Computer Users Society*, Vol. 2, No. 2 (Los Angeles, December 1975), pp. 413-414, 1976.

Daughterity, W. C., Review of *Effective Use of ANS COBOL Computer Programming Language*, by Laurence S. Cohn, in *Computing Reviews*, Vol. 16, No. 10, p. 441, 1975.

Manwell, T., Daughterity, W., Desch, S., and Stolurow, L., "Tom Swift and His Electric Bilingual Grandmother," *ACM SIGCUE Bulletin*, Vol. 7, No. 1, pp. 5-17, 1973.

Daughterity, W. C., "A Telephone Amplifier," *Transactions of the Oklahoma Junior Academy of Science*, Vol. IV, pp. 130-132, 1961.

* Graduate Research Assistant I funded

2. Other Publications

Daughterity, W. C., "Honors Section," in Rabins, M. J., and Harris, C. E. Jr. (eds.), *Engineering Ethics Teaching Manual*, 1997.

Daughterity, W. C., "Honors Section," in Rabins, M. J., and Harris, C. E. Jr. (eds.), *Engineering Ethics Teaching Manual*, 1996.

Allen, G. D., Nelson, P., Jarvis, R. D., and Daughterity, W. C., "System Impact of Hit Assessment Capability for NPB Discrimination: Analysis of the Case of No-Hit Assessment," *Weapons Lab/TALN Technical Report*, Kirtland Air Force Base, May, 1990.

3. Other Conference Papers and Presentations

Coulson, R. N., and Daugherty, W. C., "A Knowledge Engineering Approach for Ecosystem Management," 11th Annual Landscape Ecology Symposium, International Association for Landscape Ecology - Integration of Cultural and Natural Ecosystems Across Landscapes: Applications of the Science, Galveston, Texas, 1996.

Coulson, R. N., and Daugherty, W. C., "Decision Support Systems for Forest Pests: Where Do All the Knowledge-Based Systems Go?," North American Forest Insect Work Conference, San Antonio, Texas, 1996.

Daugherty, W. C. and Coulson, R. N., SPBEBE (Economic and Environmental Impact Assessment for Southern Pine Beetle Suppression Projects), computer code, developed for the USDA Forest Service, Forest Health Protection, 1996-1997.

Coulson, R. N., and Daugherty, W. C., "Knowledge System Environment for Ecosystem Management," Global Studies Seminar, Battelle Pacific Northwest Laboratories, Richland, Washington, 1995.

Daugherty, W. C. and Coulson, R. N., ISPBEX-II (Integrated Southern Pine Beetle Expert System), computer code, developed for the USDA Forest Service, Forest Health Protection, 1994.

Daugherty, W. C., and Yen, J., "Tutorial on Neuro-Fuzzy Systems," Third International Workshop on Industrial Fuzzy Control & Intelligent Systems Houston, Texas, December 1993.

Daugherty, W. C., "Introduction to LISP with an On-line Demonstration," Houston Geotech '91, Houston, Texas, 1991.

Daugherty, W. C., "The Universal Classification Problem," South Central Regional Conference of the Association for Computing Machinery, Austin, Texas, 1984.

4. Research Projects

"Remote Laboratory Data Entry and Retrieval System," Texas Department of Agriculture, Walter C. Daugherty, 1986, \$3,000 (Daugherty 100%).

"Electrochemical Modeling of a Sinter Plate, Sealed Design Nickel-Cadmium (Ni-Cd) Battery Cell," National Aeronautics and Space Administration, Ralph E. White, Walter C. Daugherty, 1 graduate student, 1989, 25% of my salary 1989-90 (Daugherty 100%).

“Application of Reasoning under Uncertainty to Process Control,” Texaco, Walter C. Daugherty and John Yen, 1 graduate student; competitive and peer-reviewed, September 1990, \$18,000.

“Design of a Computational Classroom,” Texas A & M University, Walter C. Daugherty, September 1990-May 1991, \$60,000 (Daugherty 100%).

“Design of a Second Computational Classroom,” Texas A & M University, Walter C. Daugherty, January 1991-December 1992, \$153,000 (Daugherty 100%).

“Development of Honors Courses in Artificial Intelligence and Analysis of Algorithms,” Texas A & M University, Walter C. Daugherty, James Abello and Arkady Kanevsky, 2 graduate students, competitive, September 1991-May 1991, \$11,000 (Daugherty 50%).

“Integrated Southern Pine Beetle Expert System”; USDA Forest Service; Robert N. Coulson, Walter C. Daugherty, and Jeffrey W. Fitzgerald; 5 graduate students; competitive and peer-reviewed; 1985-1992, \$974,120.

“Distributed Data-Base Support for the ISPBEX Expert System”; USDA Forest Service; Robert N. Coulson, Walter C. Daugherty, and Jeffrey W. Fitzgerald; 1 graduate student; competitive and peer-reviewed; 1992-93; \$35,000.

“Integrated Southern Pine Beetle Expert System II”; USDA Forest Service; Robert N. Coulson, Walter C. Daugherty, and Jeffrey W. Fitzgerald; competitive and peer-reviewed; March 1993-February 1994; competitive and peer-reviewed; \$170,000.

“Ecological Modelling of Regional Responses to Global Changes: A Knowledge System Environment for Planning, Problem-Solving and Decision Making”; Battelle Pacific Northwest Laboratory; Robert N. Coulson and Walter C. Daugherty; competitive and peer-reviewed; June-December 1995; \$39,996.

“Fitness of a Genetically Modified *Gliocladium virens* in Soil and Rhizosphere”; USDA Cooperative State Research Service; Charles M. Kenerley and Walter C. Daugherty; 1 senior associate, 2 graduate students, and 1 undergraduate student; competitive and peer-reviewed; September 1996-August 2001; \$254,450 (Daugherty 50%).

“Southern Pine Beetle Biological Evaluation and Economic Evaluation Program Conversion”; USDA Forest Service, Forest Health Protection; Robert N. Coulson (PI) and Walter C. Daugherty (Co-PI); competitive and peer-reviewed; 1996-1997; \$16,421.

“The Texas Imported Fire Ant Survey: The Fire Ant Spatial Information Management System (FASIMS)”; Texas Agricultural Experiment Station; Robert N. Coulson (PI) and S. Bradleigh Vinson, Maria D. Guzman, Douglas F. Wunneburger, and Walter C. Daugherty (Co-PI’s); competitive and peer-reviewed; January 1998-December 1998; \$50,000.

“Special Topics in Computer Science Concepts and Programming”; Academy for Advanced Telecommunications and Learning Technologies; Walter C. Daugherty; competitive and peer-reviewed; June 1998-May 1999; \$5,000 (Daugherty 100%).

“Object Modeling Techniques Support for National Simulation Center Tactical Directorate”; U. S. Army through prime contractor Cubic Applications, Inc.; Walter C. Daugherty, James A. Wall, and José Salinas; competitive; September 1998-April 1999; \$74,498 (Daugherty 20%).

“The Fire Ant Spatial Information Management System (FASIMS)”; Texas Department of Agriculture, Texas Imported Fire Ant Research and Management Plan; Robert N. Coulson (PI) and Douglas F. Wunneburger, S. Bradleigh Vinson, and Walter C. Daugherty (Co-PI’s); competitive and peer-reviewed; 1999-2001; \$220,000.

“Evaluating the Impact of Southern Pine Beetle on Ecologically Sustainable Forest Management”; USDA Forest Service; Robert N. Coulson and Walter C. Daugherty; 1 graduate student and 1 undergraduate student; competitive and peer-reviewed; 2000-2003, \$90,000.

“Honey Bee Initiative”; State of Texas; Robert N. Coulson (PI), Walter C. Daugherty (Consultant); 2 graduate students; competitive; September 2001-August 2002; \$40,000.

“Increasing Computer Science Retention by Developing and Deploying Self-Paced Learning Modules”; State of Texas; Jennifer Welch and Frank Shipman (Co-PI’s), Lawrence Petersen, Walter C. Daugherty, and Lauren Cifuentes (Key Personnel); 10 undergraduate students; competitive; June 2002-August 2004; \$422,692.

“Facilitating the Transition to Java in High School Computer Programming Classes”; Texas A&M University System Academy for Educator Development; Walter C. Daugherty; 1 graduate student; competitive and peer-reviewed; December 2003-September 2004; \$2,966 (Daugherty 100%).

“Instructional Technology Enhancements for Computer Teaching Labs,” Texas A&M University, Walter C. Daugherty, competitive, January 2004-August 2004, \$20,000 (Daugherty 100%).

“Increasing Computer Science Retention with Peer Teachers and Learning Modules”; State of Texas; Valerie Taylor and Jennifer Welch (Co-PI’s), Lawrence Petersen, Walter C. Daugherty, and Joseph Hurley (Key Personnel); undergraduate students; competitive; September 2004-August 2005; \$173,158.

Cumulative total: \$2,845,801

5. Research Proposals

Note: Funded proposals are listed in section 4 above.

“Automated Support for VLSI Standard Cell Optimization,” Texas Advanced Technology Program, Walter C. Daugherty, competitive and peer-reviewed, July 1989, not funded, \$233,887.

“Integration of Computer Software Models for NiCd Battery Design,” National Aeronautics and Space Administration, Ralph E. White and Walter C. Daugherty, competitive and peer-reviewed, 1990, not funded, \$125,000.

“Innovative Use of Supercomputers and Parallel Computers in Grades K-8,” Department of Energy, Paul Nelson, Walter C. Daugherty and Bahram Nassersharif, competitive and peer-reviewed, December 1990, preproposal submitted, \$885,000.

“Integration of Texas Junior Colleges into State and National Computer Networks,” Texas Advanced Technology Program, Walter C. Daugherty and Charles H. Beard, competitive and peer-reviewed, July 1991, not funded, \$174,219.

“Adaptive Fuzzy Control for Industrial Processes,” Texas Advanced Research Program, John Yen and Walter C. Daugherty, competitive and peer-reviewed, July 1991, not funded, \$177,064.

“Development of a Fuzzy Logic Tuner for a PID Controller,” Texaco, John Yen and Walter C. Daugherty, 1992-93, not funded, \$200,000.

“National Center For Ecological Analysis and Synthesis,” National Science Foundation; Robert N. Coulson, Walter C. Daugherty *et al.*, competitive and peer-reviewed, July 1994, not funded, \$10,000,000.

“Development of a Fungal Growth Model for Risk Assessment,” Texas Advanced Research Program, Charles M. Kenerley and Walter C. Daugherty, competitive and peer-reviewed, July 1995, not funded, \$203,792.

“Intelligent Vehicle Navigation System,” Texas Advanced Technology Program, Walter C. Daugherty and Jeffrey W. Fitzgerald, competitive and peer-reviewed, July 1995, not funded, \$195,058.

“Innovative Programs to Increase the Enrollment in Computer Science,” Texas Technology Workforce Development Grant Program, Valerie Taylor and Frank Shipman (co-PI’s), Lawrence Petersen, Walter C. Daugherty, and Joseph Hurley (Key Personnel), competitive and peer-reviewed, March 2005, pending, \$69,760.

6. New Design Methods, Techniques, or Concepts Developed

Null Modem

I independently invented the null modem in 1969 and constructed one for Harvard University (which is still operational!).

Computer Keyboard National Standard

As a member of the Harvard-MIT Terminal Committee, I participated in the development of the national standard for computer keyboards (*e.g.*, putting braces above brackets for the benefit of programming languages). Nearly every computer terminal and keyboard since then (*e.g.*, VT100, PC) uses this layout.

Integrated User Training

I invented the method of training users about additional features of an application program by integrating the information with the operation of the program (see Manwell, Daugherty, *et al.* under Publications, above). This is now widely adopted, *e.g.*, by Microsoft for its Windows operating systems in the “Getting Started” panel.

Object-Oriented Database

I independently invented and implemented an object-oriented database to support arbitrary combinations of data types.

Self-Organizing Fuzzy Controller

In collaboration with Balaji Rathakrishnan (a Graduate Research Assistant I funded) and John Yen, I developed a new systematic methodology for constructing and tuning fuzzy logic controllers. The research project was funded by Texaco (see the preceding section for details) for use in its refineries.

TEACHING

1. New Courses Developed

CPSC 111/211/311 Java and C-based sequence - Member of curriculum subcommittee, taught 111 and 211

CPSC 210 (Honors) - Data Structures

CPSC 320 (Honors) - Artificial Intelligence

CPSC 489 - Object-Oriented Programming, Systems, and Languages

CPSC 635 - Natural Language Processing (taught by Dr. P. Mayer)

CPSC 689 - Symbolic and Algebraic Computation (not taught)

CSCE 489/PHIL 382 (with Glen Miller [PHIL]) - Ethics and Cybertechnology

ENGR/PHIL 482 (Honors) - Ethics and Engineering

PHIL 282 (with Glen Miller [PHIL]) – Ethics in a Digital Age

PHYS/ELEN 674 (with David Church [PHYS]) - Special Topics in Quantum Computing (the first course at Texas A&M in quantum computing, and, to the best of my knowledge, the first course in quantum computing anywhere in Texas), taught Spring, 2005, for the fifth time.

A Distance Learning section of CPSC 601 - Programming in C and Java, taught Spring, 2003.

Two sections of CPSC 111 - Computer Science Concepts and Programming taught with student peer teachers as assistants, Fall, 2002.

Honors section of CPSC 111 - Computer Science Concepts and Programming taught with student peer teachers as assistants, Fall, 2004.

Developed (with Lawrence Petersen) an intensive summer training program in Java and Software Engineering for high-school computer science teachers, taught Summer, 2003.

Developing an intensive summer training program in Data Structures for high-school computer science teachers, taught Summer, 2004; I was also completely responsible for recruiting teachers, getting them admitted, arranging for housing, and so on.

2. Courses Taught

A. Graduate

CPSC 601 Programming in C and Java

CPSC 602 Object-Oriented Programming, Development, and Software Engineering

CPSC 614 Computer Architecture

CPSC 625 Artificial Intelligence

CPSC 632 Expert Systems

CPSC 681 Graduate Seminar

CPSC 685 Problems

CPSC 691	Research
PHYS/ELEN 674	Quantum Computing (co-teacher)
B. Undergraduate	
CPSC 111	Computer Science Concepts and Programming
CPSC 111H	Computer Science Concepts and Programming (Honors)
CPSC 120	Programming II
CPSC 120H	Programming II (Honors)
CPSC 203	Introduction to Computing
CPSC 206	Structured Programming in C
CPSC 210	Data Structures
CPSC 210H	Data Structures (Honors)
CPSC 211	Data Structures and Implementations
CPSC 211H	Data Structures and Implementations (Honors)
CPSC 285	Special Topics - Data Structures for Teachers
CPSC 289	Special Topics - Java and Software Engineering for Teachers
CPSC 311	Analysis of Algorithms
CPSC 320/420	Artificial Intelligence
CPSC 320H/420H	Artificial Intelligence (Honors)
CPSC 321	Computer Architecture
CPSC 464	Integrated Systems Design Automation
CPSC 485	Problems
CPSC/ELEN 485H	Problems (Honors theses)
CPSC 489	Object-Oriented Programming, Systems, and Languages
CSCE 113	Intermediate Programming and Design
CSCE 121	Introduction to Program Design and Concepts
CSCE 121H	Introduction to Program Design and Concepts (Honors)
CSCE 315	Programming Studio
CSCE 410	Operating Systems
CSCE 489	Cyberethics (co-teacher)
ENGR 112	Foundations of Engineering II
ENGR 112H	Foundations of Engineering II (Honors)
ENGR/PHIL 482H	Ethics and Engineering (Honors)

PROFESSIONAL OUTREACH

1. Director, Knowledge Systems Research Center
2. Invited Significant Seminars or Lectures

Daughterity, W. C., "Computers and Privacy," Phi Theta Kappa Honor Society State Convention, Blinn College, Brenham, Texas, 1985.

Daughterity, W. C., and DeSoi, J. F., "Objected-Oriented Programming," Second Annual Texaco Artificial Intelligence Symposium, Houston, Texas, 1989.

Daughterity, W. C., "A Self-Tuning Fuzzy Controller," ARRI Conference on Fuzzy Logic, Arlington, Texas, March 1992.

Daughterity, W. C., Yen, J., and Langari, R., "Tutorial on Fuzzy Logic," Second International Workshop on Industrial Fuzzy Control & Intelligent Systems, College Station, Texas, December 1992.

Daughterity, W.C., "A Partially Self-Training System for the Protein Folding Problem," World Congress on Neural Networks, Portland, Oregon, July 1993.

Daughterity, W.C., "Neuro-fuzzy Systems," Third International Workshop on Industrial Fuzzy Control & Intelligent Systems, Houston, Texas, December 1993.

Daughterity, W.C. and Harris, C.E., "Ethics and Engineering," NSF Research Experience for Undergraduates, College Station, Texas, Summer 1994.

Daughterity, W.C. and Harris, C.E., "Ethics and Engineering," NSF Research Experience for Undergraduates, Austin, Texas, Summer 1994.

Daughterity, W.C. and Harris, C.E., "Ethics and Engineering," NSF Research Experience for Undergraduates, College Station, Texas, Summer 1995.

Daughterity, W.C. and Harris, C.E., "Ethics and Engineering," NSF Research Experience for Undergraduates, Austin, Texas, Summer 1995.

Daughterity, W.C., "Public-Key Cryptography Meets Quantum Computing: Why Secret Agencies are Quaking in their Boots." Quantum Computing Seminar, Texas A&M University, April 9, 2001.

Daughterity, W.C., "Quantum Computing 101: How to Crack RSA." DefCon X, Las Vegas, NV, August 4, 2002.

Daughterity, W.C., "Computer Ethics." ENGR 482 Ethics and Engineering, Texas A&M University, April 14-16, 2003.

Daughterity, W.C., "Incorporating Computer Ethics into an Engineering Ethics Course." University of Texas Ethics Conference, Austin, Texas, April 16, 2004.

Daughterity, W.C., "Computer Ethics." ENGR 482 Ethics and Engineering, Texas A&M University, November 8-10, 2004.

Daughterity, W.C., "[My] 53 Years of Computing History," CSCE 681 Open Graduate Seminar, Texas A&M University, November 18, 2015.

3. Consulting

St. Joseph's Hospital, Bryan, Fall 1990, at no charge.

Other clients include IBM Federal Systems Division, New York Times, Washington Post, Los Angeles Times, Cheyenne and Arapaho Tribes of Oklahoma, Southwestern Bell Telephone, Fulbright & Jaworski (Houston), Texas Department of Agriculture, Phonogram B.V. (Amsterdam), and U. S. Department of the Treasury.

HONORS AND AWARDS

Oklahoma Junior Academy of Science, elected to membership, 1961,
Oklahoma State University

National Science Foundation, Institute for High Ability Secondary School
Students, 1962, University of Oklahoma

Westinghouse, Science Talent Search national finalist, 1963

National Merit Scholarship test, highest score in Oklahoma,
1963 Frontiers of Science, scholarship, 1963, Oklahoma
City, Oklahoma

Engineering Club of Oklahoma City, award, 1963, Oklahoma City,
Oklahoma Oklahoma Christian College, full scholarship (top entering
freshman), 1963,

Oklahoma City, Oklahoma

National Science Foundation, Undergraduate Research Participation
Program, 1965, University of Oklahoma, Norman, Oklahoma

Alpha Delta Tau, National Honor Society, 1966

Who's Who in American Colleges and
Universities, 1966 Graduate Record Exam in
Mathematics, scored 800, 1966 Harvard

University, Prize Fellowship, 1966

National Science Foundation, Academic Year
Institute, 1967 Phi Delta Kappa, National Honor
Society, 1967

Harvard University, Class Marshal for the Graduate School of Education,
1967 Harvard University, Bowdoin Prize, bronze medal and cash award
for outstanding writing, 1973

Association for Computing Machinery, selected as a reviewer for
Computing Reviews, 1975

Association for Computing Machinery, Outstanding Regional
 Intercollegiate Programming Contest Director Award, 1993,
 Indianapolis, Indiana

World Congress on Neural Networks, Neural Systems Session Co-
 chair,
 1993, Portland, Oregon

Graduate Student Council, 1997 Outstanding Graduate Faculty Award
 citation: “For your time and dedication to graduate students at
 Texas A&M.”

Named by the TAMU System to The Academy for Educator Development, a
 major component of The Texas A&M University System’s Regents’
 Initiative for Excellence in Education, 2003 (one of only two faculty
 members selected from the entire College of Engineering).

Winner, \$500 cash prize, Texas A&M University Academic Integrity
 Week Essay Competition (Faculty Category), 2004.

Texas A&M University, Department of Computer Science &
 Engineering, 2009 Undergraduate Faculty Award citation: “In
 grateful appreciation of dedicated service, exemplary attitude, and
 significant contribution.”

Qualified for American MENSA, 2015.

Oklahoma Christian University, Department of Mathematics and Computer Science,
 2015

Distinguished Alumnus Award citation: “For outstanding vision, dedication, and
 commitment to excellence.”