



# Georgia 6th District Runoff Statistical Analysis



By VoterGA

This document provides a Statistical Analysis of the 6th District Runoff Election results that generated national skepticism when they were published on June 20th, 2017. Its purpose is to assess the accuracy of the reported Runoff results using intrinsic techniques that are widely accepted by election forensics analysts throughout the country. Those techniques reveal several disparities between verifiable and unverifiable vote counts that are unprecedented in the history of electronic vote count monitoring. The study considers whether or not the reported results may have been electronically altered in a manner that would explain those disparities.

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**Table of Contents**

ABOUT THE AUTHOR..... 3

INTRODUCTION..... 4

GEORGIA ELECTION BACKGROUND ..... 5

    Georgia Election Equipment ..... 5

    Georgia Election Procedures..... 6

    GA6 April 18 Special Election Background..... 7

    GA6 June 20 Special Runoff Election Background ..... 9

    Pre-Election Integrity Concerns ..... 12

    Center for Election Systems (CES) Vulnerabilities ..... 14

RUNOFF ELECTION STATISTICS ..... 15

    Overall GA6 Results Analysis..... 15

    Results by Voting Type..... 16

    Precinct Deviation Analysis..... 18

RUNOFF MAIL-IN VOTING ..... 20

    Mail-in Voting History ..... 20

    Runoff Mail-in Campaign Strength: ..... 22

    Mail-in Voter Turnout Analysis ..... 23

        Mail-In Voter Party Affiliation..... 23

        Mail-in Affiliated Party Line Vote Scenario ..... 24

        Mail-In Shared Party Ratio Scenario ..... 24

        Mail-in Unaffiliated Split Vote Scenario..... 25

RUNOFF ELECTRONIC VOTING ..... 26

    Early Voter Turnout Analysis..... 26

        Early Voter Party Affiliation ..... 26

        Early Voter Party Line Vote Scenario ..... 26

        Early Voter Shared Party Ratio Scenario..... 27

        Early Voter Unaffiliated Split Vote Scenario ..... 27

Election Day Turnout Analysis ..... 29

    Election Day Voter Party Affiliation ..... 29

- Election Day Affiliated Party Line Vote Scenario ..... 30
- Election Day Shared Party Ratio Scenario..... 30
- Election Day Unaffiliated Split Vote Scenario ..... 31
- OVERALL VOTING ANALYSIS..... 32
  - Overall Voter Party Affiliation..... 32
  - Overall Affiliated Party Line Vote Scenario ..... 32
  - Overall Shared Party Ratio Scenario ..... 33
  - Overall Unaffiliated Split Vote Scenario..... 33
- Special Election vs. Runoff Comparative Analysis..... 34
- SUMMARY OF FINDINGS..... 36
  - Statistics Indicating Result Correctness ..... 36
  - Conditions that Support Result Correctness..... 36
  - Statistical Disparities Indicating Results are In Doubt ..... 37
    - Unverifiable vs. Verifiable Vote Counts ..... 37
    - Precinct Deviation Analysis ..... 37
    - Mail-in Voting Analysis..... 37
    - Mail-in Voter Turnout Analysis ..... 38
    - Early Voter Turnout Analysis..... 38
    - Election Day Voter Turnout Analysis..... 39
    - Overall Turnout Analysis ..... 40
  - Conditions that Support Statistical Disparities ..... 41
- CONCLUSIONS..... 43
- EXHIBITS ..... 49
- APPENDIX..... 69
  - Academic Studies on AccuVote TS and TSX Machines..... 69
  - History of Georgia Vote Counting Discrepancies..... 70
  - Chronology of GA6 Key Events ..... 71

### ABOUT THE AUTHOR

Garland Favorito is a co-founder of *Voters Organized for Trusted Election Results in Georgia* (VoterGA) and Elections Director of the Constitution Party of Georgia. VoterGA is a nonpartisan, non-profit, all-volunteer organization dedicated to restoring the integrity of Georgia elections. Its primary objective is to advocate for verifiable, auditable and recount-capable voting in Georgia. It also advocates for fair and equal ballot access for all Georgia citizens.

Mr. Favorito is a career Information Technology professional with over 40 years of in-depth experience in internet systems design, business systems analysis, database administration, application development, systems integration, systems life cycle methodologies, computer programming, project management, and multi-factor security for financial transactions. His experience centers on medium- and large-scale mission-critical applications in nearly all facets of American business. His industry experience includes banking, financial systems, health care, accounting, manufacturing, inventory, purchasing, retailing, utilities, telecommunications, insurance, software development and the service industry.

Mr. Favorito also has 15 years of volunteer involvement in regards to Georgia's voting machines, dating back to 2002 before the state purchased and implemented the machines. His election integrity activities include research, analysis, documentation, and presentations involving Georgia's current voting systems. He is recognized throughout most of the state as a leading expert on the usage of, and risks involved with, Georgia's voting machines.

Mr. Favorito also provided VoterGA [statistics](#) for the 2010 South Carolina U.S. Senate Democratic primary to the Vic Rawl campaign and [notification](#) to the South Carolina State Election Board of VoterGA findings as discussed later in this document. The primary was one of the most questionable elections in electronic voting monitoring history.

Mr. Favorito lives in Roswell at the epicenter of Georgia's 6<sup>th</sup> Congressional District (GA6). His residence is about three miles from the home of Karen and Steve Handel and one mile from one of the Jon Ossoff campaign offices that conducted the most massive door to door canvassing operation he had ever witnessed. Mr. Favorito is acquainted with a variety of different Republican and Democrat leaders who were active in the 6<sup>th</sup> District races, as well as the election officials in the GA6 counties. He integrated their knowledge into this statistical analysis and the VoterGA [Root Cause Analysis](#) he authored. That study identified results reporting problems that occurred during the GA6 Special Election held on April 18, 2017. VoterGA is nationally recognized as the leading election integrity organization in Georgia.

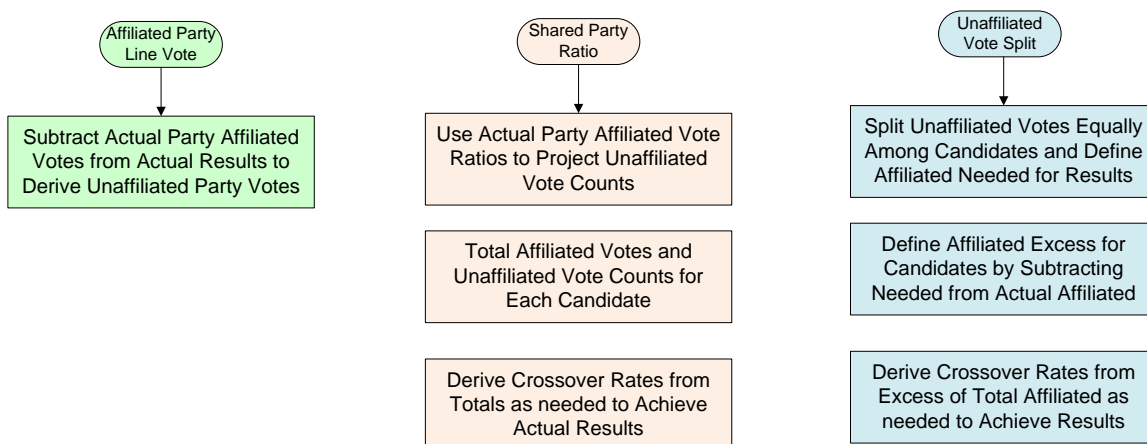
### INTRODUCTION

This statistical analysis culminates four months of study into reported results for the 6th District (GA6) Runoff Election held on June 20, 2017. VoterGA initiated this study as a result of national skepticism regarding the unverifiable results in both the GA6 Special Election and particularly the GA6 Runoff. The document has separate sections for the statistical analysis, summary of findings and conclusion. The *Summary of Findings* section contains all key statistics so that the casual reader can skip the analysis and go straight to the *Findings* and *Conclusions* sections.

To assess the credibility of the GA6 Runoff results, the study contrasts the verifiable vote counts from mail-in and provisional ballots with the unverifiable early voting and Election Day vote counts. It determines actual voter party affiliation from the primary voting history of GA6 mail-in voters and early voters based on completed ballot records for their applications. It applies three alternative scenarios regarding unaffiliated vote counts (i.e., votes cast by voters without a party-affiliated voting history) and projects potential Runoff election outcomes that can be compared to the reported results. The three scenarios are:

1. **Affiliated Party Line Vote** - Projects unaffiliated vote counts that each candidate needs to achieve the reported results if all affiliated voters voted for their party’s candidate;
2. **Shared Party Ratio** – Projects unaffiliated vote counts by extrapolating the affiliated party ratio and identifies a crossover rate that achieves reported results by vote type;
3. **Unaffiliated Vote Split** – Applies an even split of unaffiliated votes to the counts for each candidate and projects an affiliated crossover rate to achieve reported results

The combined scenarios offer a range of possibilities covering the spectrum of how unaffiliated Runoff votes may have been cast for the candidates - including majority Republican, majority Democratic and equal split. The scenario steps are illustrated here:



### GEORGIA ELECTION BACKGROUND

#### Georgia Election Equipment

In 2001, Georgia evaluated electronic voting equipment in response to media hype concerning the 2000 Presidential Election. In 2002, it became the first state to implement a statewide voting system. The Secretary of State's office chose the AccuVote TS Direct Recording Electronic (DRE) voting machines originally produced by Global Election Management Systems (GEMS). Diebold acquired Global before the contract with Georgia was signed in May of that year. The contract included GEMS county election servers. The GEMS server software runs on the Windows 2000 Operating System with Service Pack 4 installed. The DRE software runs on a modified version of the Windows/CE operating system. The server database runs on the Microsoft *Joint Engine Technology* (JET) engine. In 2011, Georgia upgraded the voting machine software to Ballot Station version 4.5.2 and upgraded the GEMS software to GEMS Version 1.18.22 as part of a statewide voting software upgrade.

The vendor supporting Georgia's statewide voting system implementation is [Election Systems & Software](#) (ES&S). Both Global and ES&S originally started in 1979 as Data Mark, which was renamed American Information Systems in 1980. Those companies were founded by brothers Bob and Todd Urosevich, who separated to form Global Election Systems and ES&S, respectively. In 2002, when Diebold acquired Global Election Systems, it established an election subsidiary named Diebold Election Systems. In 2007, Diebold renamed its elections subsidiary Premier Election Solutions after the company received negative nationwide publicity for its voting equipment. In 2010, Premier sold its voting system hardware and software support rights to ES&S. Premier also sold its voting system intellectual property rights to Canadian based [Dominion Voting Systems](#).

In 2012, Georgia Secretary of State Brian Kemp executed a contract to publish its state election results through Clarity Elections ENR, which is produced by Tampa-based SOE Software. SOE was a subsidiary that had just been acquired by the Spanish-owned [SCYTL](#) in January of that year. Cobb County reported its votes using Clarity software in 2014 and Fulton County began reporting its votes using Clarity software in 2016.

The [Center for Election Systems](#) (CES) at [Kennesaw State University](#) (KSU) prepares the Georgia voting system for each election. In 2001 former KSU professor Britain Williams participated in a voting system evaluation conducted by Secretary of State Cathy Cox. When the system was purchased in 2002, Cox signed a contract with CES for election support. CES creates ballots and election databases for each county. It also provides technical support for each election.

### Georgia Election Procedures

The Center for Election Systems (CES) creates the ballots, poll book files and GEMS databases. CES distributes them to each county prior to an election. Each county loads the database it receives onto its GEMS server and programs each voting machine memory card. The memory cards are then loaded into each voting machine to record the results for voters. Each county loads voter data contained on the poll book file into each precinct poll book. The poll book file is used to verify voters on Election Day and create a voter access card that voters load into the voting machine to tell the machine that they are authorized to cast one vote. The voting machine then displays the ballots to voters and accepts their selections from the touch screen.

(See Exhibit 7)

Poll workers also use the poll books to create voter access cards for early in-person voters. However, CES does not load the poll book files with voter data for in-person early voting. Early in-person voters are verified using a central database before the poll worker uses the poll book to create a voter access card for the voter. The central database also records that the voter is voting at the early voting location to prevent subsequent double voting at a different location.

When the poll close precinct workers print copies of the voting machine tapes that include the vote-count totals for each contest. They post one copy of each machine tape on the door of the precinct building where the election took place so that it can be viewed by the public. The precinct workers remove the memory cards with the votes cast on each machine and place them in a sealed envelope with a copy of the machine tapes. The precinct manager and assistant then hand deliver the sealed envelopes to the county elections office for processing.

Fulton County operates three upload points. They are at the North Annex, South Annex and the Roswell City Hall. The precinct manager and assistant take the envelopes to one of the upload points. Each precinct card is checked in according to its assigned number and then uploaded to the county elections database for accumulation.

County election officials accumulate the results, print out statements of votes cast and export the results for publishing. The results then appear on the county web sites for public consumption.

### GA6 April 18 Special Election Background

The State of Georgia held a Special Election on April 18, 2017 to fill the seat vacated by 6<sup>th</sup> District U.S. Congressman Tom Price. Rep. Price was appointed by President Trump as Secretary of Health and Human Services and sworn in on February 10, 2017. A field of 18 candidates qualified by the February 15 deadline, including 11 Republicans, five Democrats and two Independents. If no candidate received 50 percent of the vote, the top two vote-getters would enter a Runoff. The election, one of the first since the closely contested Presidential election in November 2016, garnered intense national attention as a proxy on the Trump presidency.

The 6<sup>th</sup> district (GA6) spans the counties of [Cobb](#), [DeKalb](#), and [Fulton](#) -- Georgia's largest and most populous county. Fulton County experienced what was termed a "rare" error that caused vote-count tabulation delays during Election Night, although Cobb and DeKalb did not. Fulton had experienced one other vote-count problem with a write-in candidate in 2006. Georgia counties, particularly Cobb, previously had experienced a variety of vote counting problems.

(See Appendix Vote Count Discrepancies)

Throughout Election Night, interim reporting percentages for GA6 vote-leader, Jon Ossoff, hovered in the 50-60 percent range but declined gradually to just over 50 percent. Once Fulton County corrected its error just before midnight, the leader's vote totals dropped below 50 percent, thus necessitating a Runoff with the second-place candidate according to Georgia law. That candidate, Karen Handel, was nearly 30 points behind with 19 percent of the vote. The [results](#), coupled with the sequence of events for the evening, drew national skepticism about the validity of the election. This skepticism continued a trend of national criticism that Georgia has received since 2002, when the state implemented what national election experts call "unverifiable elections."

(See also Exhibit 1)

VoterGA produced a [Root Cause Analysis](#) to identify why such an error occurred for the many concerned voters in Georgia and throughout the country who were left uninformed about the details of what actually happened. The analysis concluded that there were two root causes of the error that caused two-hour reporting delays and a strange shift in results:

1. The state improperly combined the GA6 election on the same day as a scheduled local Roswell Runoff election whose candidates could not be known in time to comply with ballot lead-time regulations of the Military Overseas Voting Empower Act (MOVE). That forced Fulton County to use redundant ballots, databases, voting machines, memory cards and registration procedures for the federal GA6 election and Roswell Runoff.



2. Critical security flaws at both the voting machine and county database server levels allowed election officials to load a voting machine card from the Roswell Runoff into the GA6 live election results. They encountered another serious flaw when the county server malfunctioned. That prevented export of the improperly loaded results for publishing.

The Johns Creek City Council also failed to consider MOVE regulations and voted to improperly combine a City Council Special Election with the GA6 race on April 18. That further caused Fulton County to conduct triplicate redundant elections on the same night. However, the [Root Cause Analysis](#) determined that this was not a root cause in the results reporting problems that occurred on that Election Night.

### GA6 June 20 Special Runoff Election Background

The State of Georgia held the 6<sup>th</sup> District (GA6) Special Election Runoff between Democrat Jon Ossoff and Republican Karen Handel on June 20, 2017. Tom Price had won the last three elections in the Republican-oriented district by an average margin of 63.5 to 36.5 percent. Both campaigns increased their activities after the Special Election and throughout the Runoff campaign period. No events occurred that were intrinsic to the Runoff or significant enough to materially affect its outcome according to polls up to a week before the election.

When officials published [results](#) on Election Night, Karen Handel picked up all 32 percent of the votes from the other 16 Republican, Democrat and Independent opponents who participated in the Special Election on April 18. Ossoff's totals remained flat and showed less than one tenth of a percent difference. On April 18, Ossoff had 48.13 percent to 19.77 percent for Handel. On June 20, Handel had 51.78 percent of the vote to 48.22 percent for Ossoff.

(See also Exhibit 2)

The reported results again generated national skepticism. A week before the election no current poll had projected Handel to win. Her 3.75 percent victory was outside error margins of the polls conducted. On May 4, the first poll conducted after the Special Election showed Handel with a 2.6 percent lead but that Landmark Communications poll was superseded by three subsequent Landmark polls conducted for WSB-TV, all showing an Ossoff 1 to 2.5 percent lead. Ten polls in a row had shown Ossoff leading by anywhere from 0.1 to 7 percent, with Republican-to-Ossoff crossover margins of 7.5, 10, 12.5 and 15 percent.

The last two of those polls from Fox 5 and WSB-TV indicated that the race was tightening. A June 18 outlier poll from the Republican-identified polling group Trafalgar showed Handel with a 1.87 percent lead after they had shown Ossoff with a 2.76 percent lead four days earlier. The Trafalgar June 14 poll showed Ossoff with a 12.56 percent lead in early voting and Handel with only a 2.44 percent lead in those who had not yet voted. The reported results showed Handel outperformed all aspects of the June 18 poll that was the only poll predicting she might win.

A few national pundits speculated that a June 15 incident in Washington, D.C., where U.S. Congressman Steve Scalise (R-LA) was shot in the hip at a baseball practice may have reversed the election results in the last few days. Although plausible, the speculation is unsubstantiated and contradicted by local facts. First, polls showed the number of undecided Election Day voters was only around 3% at that late date. Secondly, both Democratic and Republican 6<sup>th</sup> District campaign leaders confirmed that the incident had no quantifiable effect on voters as it

was not directly connected to the GA6 election. Thirdly, the key disparities identified in this statistical analysis existed during mail-in and early voting that took place before June 15.

(See Exhibit 11)

The previous behavior of Handel and Secretary of State (SOS) Brian Kemp fueled additional skepticism as to whether or not the race had been targeted for hacking. On April 19, the day after Handel made the Runoff, Kemp posted endorsements of Handel on [Facebook](#), [Twitter](#) and his social media [web site](#). They read in part: *"I look forward to working with Karen in the weeks ahead to ensure victory at the ballot box."*

As a former SOS candidate, Handel wrote a 2006 [Basics Report](#) that stated the machines were *"...already obsolete..."* The System Integrity section concisely explained the need for voter verification of their ballots, election audits and a paper audit trail as the ballot of record. Handel pledged: *"As Secretary of State I will establish a commission that includes both county and state elections officials to make recommendations regarding new purchases of electronic voting machines."* She explained that: *"We need to move quickly and expeditiously..."* and *"...ensure that the system we are putting in place is well designed and thoroughly thought out..."*

However, once elected, Handel reversed her position. On Sept. 28, 2009, she told a Gwinnett Co. news service that: *"Georgia has the most secure elections in the nation..."* despite the problems cited before then, as shown in the Appendix. Ethics Commission records show that Handel received over [\\$25,000 in donations](#) from family members and partners of the voting machine vendor lobbying firm, Massey Bowers LLC. Handel hired Massey Bowers' partner, Rob Simms, as Assistant Secretary of State and he became a key fund raiser in her unsuccessful gubernatorial and U.S. Senate campaigns.

Runoff results showed that Ossoff won the verifiable mail-in vote by a remarkable 64 to 36 percent margin. Shockingly, Handel then won the unverifiable Election Day vote by a 58 to 42 percent margin that was unexpected and unpredicted by anyone. The Ossoff team conducted a massive door to door campaign that intensified in the last two weeks before Election Day. On the last two weekends the team rented dozens of vans to transport thousands of volunteers who poured in from all over the country. Fueled by over \$20 million in out-of-state funds, the campaign reported 12,000 volunteers who knocked on nearly every door in the district, many multiple times. The extensive Ossoff campaign was highly visible to all 6<sup>th</sup> District observers throughout the election cycle and particularly in the last days preceding the June 20 election when additional volunteers and vans canvassed the district.

Disparities were also found between verifiable mail-in votes and the unverifiable Election Day votes in nearly every precinct, to an extent that election forensics analysts have not seen

before. All in all, there was a cluster of red flags: questionable GA6 Runoff results, security flaws found in the GA6 Special Election, and a problematic history of Georgia election integrity issues as described in the next section. This constellation of serious concerns led a dozen national election monitors to write a [letter](#) to the three GA6 county election boards before the election results were certified.

The letter began: *“We the undersigned public advocates for accurate and transparent elections are writing to alert you to early indications that hacking or other tampering may have altered the results of the Sixth District Special Election Runoff held on June 20, 2017.”* The letter also expressed concern about vulnerabilities that existed for months at Kennesaw State University’s (KSU) Center for Elections Systems (CES), which prepares the ballots used on every machine for every election. The letter further explained, *“...emerging statistical patterns indicate a strong likelihood that the outcome of the Special Runoff Election was altered.”* It re-emphasized the risk that, *“...it is highly likely the unofficial results of the Special Runoff Election are incorrect, to the point that **the election outcome appears to have been affected.**”* The letter concludes, *“Should you continue to stand by the reported results, we call upon you to prove to Georgia’s voters that the reported results are a true and accurate measure of the votes cast by the voters of Georgia’s Sixth Congressional District.”*

(See Exhibit 3)

The primary author of the present analysis delivered the letter to each county election board, along with a similar letter on behalf of the VoterGA members. The VoterGA [letter](#) cited seven points that cast the election results in doubt, and requested each board to conduct a basic forensic investigation before certifying the election canvass results, in accordance with State Election Board regulations.

(See Exhibit 4)

Although all petitions appeared to be correctly submitted and none was *challenged*, all three counties *ignored* those petitions and proceeded to certify the unverifiable results.

No verification, auditing, recount or re-canvass of the unverifiable GA6 reported Runoff results will ever take place in response to public concern. This statistical analysis of the GA6 Runoff results may be the only vehicle through which Georgia citizens and other concerned Americans can ever have insight into the results of what is now recognized as the most expensive congressional race in American history.

### Pre-Election Integrity Concerns

Before their 2002 implementation, Georgia's voting machines were criticized by election officials, state legislators, political leaders and the primary author of this analysis for producing results that cannot be verified, audited or recounted. In this flagrant trifecta of non-transparency:

1. Voters cannot verify that their selections were recorded on the DRE memory cards that tally the votes.
2. Election officials have no mechanism to audit totals produced before certifying an election.
3. Candidates cannot receive a true recount since the system can only reprint previous unverifiable results.

In their first use, the machines produced two of the most controversial elections in electronic voting history. Rep. Saxby Chambliss upset incumbent U.S. Senator Max Cleland, a triple-amputee Vietnam veteran, and State Senator Sonny Perdue upset incumbent Governor Roy Barnes after having converted from a Democrat to a Republican about four years earlier. Chambliss won by a seven point margin although all polls showed Cleland ahead by a comparable margin. Perdue won by a five point margin although polls showed Barnes ahead by seven. These egregious swings stood out all the more, since down-ballot races trended toward Democrats and exhibited no such perturbations. Talk-show host Sean Hannity termed the election the "earthquake in Georgia."

The state [certification](#) showed that the county servers were never certified. SOS Cathy Cox had certified only the Accuvote TS R6 voting machines. KSU Professor Britain Williams admitted under oath in a [deposition](#) that Diebold patched Fulton and DeKalb County servers with uncertified software. Diebold President Bob Urosevich delivered that patch to Georgia according to witnesses. A December 3, 2002 [letter](#) from Assistant Secretary of State Robert Ray to Urosevich explained in its "punch list" that the office was still concerned about federal certifications and was awaiting "*Confirmation that statewide voting system is appropriately certified*" a month after conducting the November election.

As early as 2003, a variety of academic institutions and state governments commissioned studies regarding the AccuVote TS and TSx machines as well as the GEMS servers. These studies found hacking vulnerabilities, critical security flaws, design failings, programming errors, and other issues involving reliability. Virtually all of the studies were extremely negative with regard to the security and accuracy of the machines.

(See Appendix Studies)

During 15 years of use in Georgia, Georgia counties have encountered a variety of problems with the voting systems. These include lost votes, accumulation failures, altering of votes without audit detection, adding votes cast during machine testing into actual elections totals, and other critical errors that can impact, and have impacted, election results. Georgia has failed to address most of these problems even though the 15-year-old equipment is now five years past its 10-year recommended useful life.

(See Appendix Discrepancies)

In March of 2017, critical vulnerabilities on the CES public website were confirmed by Christopher Grayson. Those vulnerabilities had been originally discovered during 2016 by Logan Lamb, who notified CES Executive Director Merle King. Both internet security professionals determined that the vulnerabilities publicly exposed *all key election data*, as described in the next section. Mr. King did not ensure the vulnerabilities were remediated and did not notify the Secretary of State.

Before the GA6 election, 20 computer scientists wrote a [letter](#) to Secretary of State Kemp questioning the CES vulnerability breach, urging him to move Georgia to verifiable voting and offering their assistance in doing so. They indicated that they never received a response.

(See Exhibit 5)

After the April 18 GA6 Special Election [revealed](#) voting system security flaws, more concerns were raised regarding certification of the voting system. The state has not produced a full voting system certification since 2008, even though system software and components have been upgraded and patched several times since.

When the June 20 GA6 Special Runoff Election produced highly questionable results, all three county boards [ignored](#) the citizens who presented re-canvass petitions, although the petitions were submitted according to State Election Board rules. A [lawsuit](#) challenging the results and the voting machines was ultimately filed.

All of these concerns, which have festered for the last 15 years, necessitated a statistical analysis of the GA6 Runoff results.

### Center for Election Systems (CES) Vulnerabilities

In 2016 and 2017, all key Georgia election information managed by CES was found to be severely compromised. On August 24, 2016 internet security professional Logan Lamb discovered that Georgia's key election information was installed on a [CES web server](#) exposed to the general public rather than being placed on an internal application server protected by a firewall. This election information included:

- Georgia voter registration data containing 6.7 million personally identifiable records
- GEMS county databases used to accumulate votes for elections
- PDFs of election server administration documents, including supervisor passwords
- Windows executables used to create databases, export election results, etc.
- Training videos that explained to county users how to download files onto a memory card and insert it into a voting system

Lamb discovered that these files had already been cached by Google from previous public accesses. Lamb also discovered that the web server was running a version of Drupal that contained a security flaw known as "Drupageddon." An advisory warning had been published since 2014 to explain that the flaw allows an attacker to execute, create, modify and delete anything on the server.

(See Exhibit 9)

Lamb emailed CES Executive Director Merle King on August 28, 2016 to explain the vulnerabilities. King assured him that the vulnerabilities would be remediated. However, when Lamb explained the vulnerabilities to colleague Christopher Grayson six months later in February of 2017, Grayson determined that the vulnerabilities had not been properly remediated and still existed.

Grayson contacted KSU security instructor Andy Green, who engaged the head of the Kennesaw State Information Security Office. The office took action to move the server offline. Pending litigation has restricted the release of further information about these vulnerabilities. It is unclear how county election officials are currently accessing the server data, if at all, or for how many years the vulnerabilities existed.

### RUNOFF ELECTION STATISTICS

#### Overall GA6 Results Analysis

In the GA6 Special Election held on April 18, 48.92 percent of the voters cast a vote for one of five Democrats in the race while 50.99 percent of voters cast a vote for one of 11 Republican candidates in the race. The remaining 0.09 percent of voters cast votes for one of the two independent candidates. Jon Ossoff received 48.13 percent of the overall vote to 19.77 percent of the overall vote for Karen Handel.

In the June 20 Special Election Runoff, Handel received 51.78 percent of the vote to 48.22 percent for Ossoff. Percentage-wise, Handel picked up 32 percent. That equates to nearly all of the votes from the other 16 opponents who participated in the GA6 Special Election. Ossoff totals remained flat and showed less than one tenth of a percent difference.

	<b>Special</b>	<b>Special %</b>	<b>Runoff Votes</b>	<b>Runoff %</b>	<b>Net Gain</b>
<b>Ossoff</b>	92,673	48.13%	124,517	48.22%	.09%
<b>Handel</b>	38,071	19.77%	134,799	51.78%	32.01%
<b>Other Republicans</b>	60,121	31.22%			
<b>Other Democrats</b>	1528	.79%			
<b>Independent</b>	176	.09%			
<b>Total Republicans</b>	98,192	50.99%			
<b>Total Democrats</b>	94,201	48.92%			

The reported results clearly indicate that there was a stronger Republican voter turnout increase for the Runoff than there was for Democrats. The reported results also imply that some Democrats may have crossed over to vote for Handel in the Runoff. The reported results further allow for a possible combination of both scenarios.

(See Exhibit 8)



### Results by Voting Type

Georgia collects votes for an election in four different ways. Voters can:

- Vote by mail when submitting a mail-in ballot application to the county after May 2, receiving the ballot and returning it to the county by Election Day;
- Vote early using an electronic voting machine at selected polling locations that were open from May 30 to June 16 for the Runoff;
- Vote at their precinct using an electronic voting machine on Election Day;
- Vote at the precinct on a provisional ballot that is counted after verification of eligibility.

Mail-in and provisional votes are cast on potentially verifiable paper ballots, while Election Day and early in-person voting use unverifiable DRE voting machines. The percentages of votes cast in the Runoff for each voting type are shown below:

Mail-In	Provisional	Total Verifiable	Early Votes	Election Day	Total Unverifiable
10.84%	.02%	11.04%	44.09%	44.87%	88.96%

The 596 verifiable provisional votes, at just under a quarter percent of the votes cast, are not adequate for a statistical sample. They can be considered along with the mail-in vote for illustrative purposes as *verifiable* votes. It is necessary to distinguish between potentially verifiable and unverifiable votes. Verifiable votes, however cast and gathered, are far riskier to manipulate than are unverifiable votes, the manipulation of which is virtually impossible to directly detect.

Dramatic differences exist in verifiable mail-in and unverifiable electronic vote results. Handel's winning margin was 51.78 percent to 48.22 percent but the verifiable mail-in votes show *Ossoff* with a 64 percent to 36 percent advantage, a margin of 28 percent. Provisional votes show a 73 percent to 27 percent *Ossoff* advantage that is even greater than the mail-in margin. This study does not attempt to combine these votes since the quantity of Provisional votes is very low and voter party affiliation could not be determined for them.

The 28,146 verifiable mail-in votes cast represent 10.84 percent of the total Runoff votes and thus—if mail-in voters were shown to mirror the characteristics of the electorate as a whole—would create a large, adequate statistical sample more than triple a 3 percent ratio generally accepted as reasonable for a statistical audit.

Unverifiable early voting (i.e., at-poll voting on DREs) was a virtual dead heat between the candidates. Ossoff's margin is just over 1 percent. Unverifiable Election Day voting, however, shows a dramatic shift from early voting and an even *more* dramatic shift from *verifiable* vote results as shown:

	Mail-In	Early Votes	Election Day	Provisional
Ossoff	64.18%	50.67%	41.84%	72.99%
Handel	35.82%	49.33%	58.16%	27.01%

All results are reasonably consistent across counties, allowing for partisan demographics, with Cobb trending more toward Republicans and DeKalb trending more toward Democrats. That militates against strictly local miscounting or fraud scenarios. However, these outsized disparities between verifiable and unverifiable modes of voting (particularly Election Day) naturally raise the question of what factors, benign or malignant, might account for such bizarre divergent patterns.

### Precinct Deviation Analysis

A precinct analysis confirmed that large disparities exist between mail-in voting and Election Day voting in the vast majority of GA6's 208 precincts. 174 of the precincts had a 20+ point total swing in mail-in vs. Election Day vote results (a 20-point swing, for example, would be Ossoff Mail-in 55 to 45 percent vs. Handel Election Day 55 to 45 percent margins of victory). 116 of those precincts had a 30-point swing for the same vote types. 41 of those precincts had a 60-point total swing (Ex: Ossoff Mail-in 65 to 35 percent vs Handel Election Day 65 to 35 percent margins of victory). This is illustrated in the following table:

Precincts out of 208	Point Swing	Handel Election Day Example	Ossoff Mail-in Example
41	60%+	65%-35%	65%-35%
116	40%+	60%-40%	60%-40%
174	20%+	55%-45%	55%-45%

In 196 of the 208 precincts Ossoff received a higher percentage of mail-in votes than did Handel. Of the remaining 13 precincts, where Handel had a higher percentage of mail-in votes than Ossoff, nine were precincts that were only partially contained within GA6 and thus had fewer votes cast. The average point swing was 22 percent in Cobb, 22 percent in DeKalb, and 21 percent in Fulton. Four Fulton partial precincts had no mail-in ballots and were excluded from the totals and averages.

Most of the remaining precincts were partial GA6 precincts, where only a few hundred precinct votes were cast in the Runoff because most voters lived in a different congressional district. Only three full precincts, one in DeKalb and two in Fulton showed a reverse trend where Karen Handel had more verifiable mail-in votes and Jon Ossoff had more Election Day votes. All of those precincts had less than a 20-point swing.

The only known [precedent](#) for equal or greater disparities in similar numbers of verifiable mail-in and unverifiable (i.e., paperless DRE) Election Day vote counts occurred in the 2010 South Carolina Democratic U.S. Senate primary between Alvin Greene and Vic Rawl. The total disparity between those counts in that race was about 28.5 percent, compared to about 22 percent in the GA6 Runoff. Alvin Greene was declared the winner of the primary by a 60 to 40 percent margin although Vic Rawl won the mail-in ballots by 55 to 45 percent.

Vic Rawl, a county commissioner, former judge and four term state representative, ran a professional campaign headed by campaign manager Walter Ludwig. He personally campaigned

in at least half of the counties, made radio and TV appearances, attended the state convention, collected official endorsements, had 600 volunteers, printed 10,000 bumper stickers, established 180,000 database contacts, created a 104,000 email distribution list, had 3,300 Facebook Friends, sent out 300,000 emails just prior to the election, received 20,000 web site hits on Election Day alone, was not touched by any scandal, and was more active on Twitter than the Democratic Party candidates for other offices. He had closed to within 7 percent of Republican incumbent Jim DeMint in tracking polls, and thus posed a credible threat in November.

Alvin Greene, an unemployed military veteran, managed to pay a \$10,000 qualifying fee by means that are still unclear but he did not actually have a campaign. He held no fundraisers, ran no paid advertisements, made no campaign speeches, hired no campaign manager, conducted no state-wide tours, attended no Democratic Party county events, printed no yard signs and did not even establish a website.

Judge Rawl unsuccessfully challenged the results of the primary (because it was a primary contest, the South Carolina Democratic Party had jurisdiction), one of the most [suspect elections](#) in electronic vote monitoring history.

### RUNOFF MAIL-IN VOTING

#### Mail-in Voting History

The outsized disparities between verifiable and unverifiable (and particularly Election Day) modes of voting naturally raise the question of what factors, benign or malignant, might account for such bizarre divergent patterns. To assess the election results we started by analyzing the principal verifiable voting mode, which is mail-in voters.

The first step is an examination of trends and historical patterns exhibited for 6<sup>th</sup> District mail-in voting with the question being whether Ossoff's mail-in landslide can be explained simply by a greater tendency of Democratic voters to mail in their ballots. Both general election and primary voting history can be analyzed to determine whether more GA6 Democrats or Republicans traditionally vote by mail. The Election Defense Alliance provided the following GA6 historical analysis:

#### A Comparison of Vote-By-Mail Patterns For Voters in Georgia Sixth Congressional District 2012 - 2017

ELECTION YEAR0	%Total Vote Margin (R win = +)	DRE* Vote-R	DRE Vote-D	%DRE Vote-R	%DRE Vote-D	%DRE Vote Margin	OPSCAN** Vote-R	OPSCAN Vote-D	%OPSCAN Vote-R	%OPSCAN Vote-D	%OPSCAN Vote Margin	%OPSCAN Vote Margin Minus %DRE Vote Margin***
2012	29.0%	173,826	97,642	64.0%	36.0%	28.1%	15,250	6,060	71.6%	28.4%	43.1%	15.1%
2014	32.0%	132,143	68,265	65.9%	34.1%	31.9%	6,565	2,919	69.2%	30.8%	38.4%	6.6%
2016	23.4%	185,766	117,122	61.3%	38.7%	22.7%	15,095	7,602	66.5%	33.5%	33.0%	10.4%
<b>2012 - 2016 Aggregate</b>	<b>28.1%</b>	<b>491,735</b>	<b>283,029</b>	<b>63.5%</b>	<b>36.5%</b>	<b>26.9%</b>	<b>36,910</b>	<b>16,581</b>	<b>69.0%</b>	<b>31.0%</b>	<b>38.0%</b>	<b>11.1%</b>
<b>2017 - Prelim****</b>	<b>3.8%</b>	<b>98,177</b>	<b>87,387</b>	<b>52.9%</b>	<b>47.1%</b>	<b>5.8%</b>	<b>1,537</b>	<b>5,046</b>	<b>23.3%</b>	<b>76.7%</b>	<b>-53.3%</b>	<b>-59.1%</b>
<b>2017 - Runoff</b>	<b>3.8%</b>	<b>124,557</b>	<b>107,017</b>	<b>53.8%</b>	<b>46.2%</b>	<b>7.6%</b>	<b>10,081</b>	<b>18,065</b>	<b>35.8%</b>	<b>64.2%</b>	<b>-28.4%</b>	<b>-35.9%</b>

\* DRE voting includes at-poll and early in-person voting.

\*\* OPSCAN voting includes only Vote-By-Mail voting.

\*\*\* A positive (+) percentage in this column indicates Republican performed better in OPSCAN vote than in DRE vote; i.e., Republican voters were more likely than Democratic voters to use Vote-By-Mail to cast their votes.

\*\*\*\* In 2017 Preliminary contest, D = Ossoff, R = All other candidates (12 R, 4D); Ossoff <50% = Runoff.

This table shows that historically more GA6 Republicans than Democrats have voted by mail. In 2012, Republicans cast 71.6% of mail-in ballots while Democrats cast 28.4%. In 2014,

Republicans cast 69.2% of mail-in ballots while Democrats cast 30.8%. In 2012, Republicans cast 66.5% of mail-in ballots while Democrats cast about 33.5%.

In previous election years the Republican margin of victory was substantially greater than in 2017. This chart takes into consideration the margin of victory in the last three GA6 elections, which, as a series of relatively noncompetitive and therefore unlikely-to-be-targeted contests, establish a sound baseline for analyzing voter behavior in GA6. The Republican candidate's margin of victory among mail-in voters was over 11 percent *greater* on average than among voters whose votes were counted in an unverifiable manner on DREs. That demonstrates a consistently greater propensity among *Republican* voters, relative to their Democratic counterparts, to use the mail-in option.

But in the highly competitive and nationally significant 2017 Runoff now under examination, this trend dramatically reversed. It was the *Democratic* candidate whose performance among mail-in voters was a staggering 36 percent better than his performance among voters whose votes were counted on DREs in an unverifiable manner. The fact that GA6 Democratic voters do not appear historically to be mail-in voting enthusiasts gives rise to the question of why the reported Runoff results show that they seem to have suddenly become so to such an overwhelming degree in 2017.

This historical trend casts some doubt on the current reported Runoff results. The next two sections will analyze the actual GA6 Runoff mail-voters and campaign. That will help determine whether the dramatic reversal in mail-in versus in-person voting patterns is due to an Ossoff campaign mail-in surge or *miscounting of the larger pool of unverifiable ballots*. Such miscounting may have reduced the total Ossoff vote to an extent that the mail-in and DRE ballot count differences were amplified by comparison.

### Runoff Mail-in Campaign Strength:

While all mail-in votes are potentially verifiable, they can still be subject to fraud or tampering in cases of identity theft or ballot box stuffing. No such instances of mail-in fraud by election officials or either of the campaigns was reported for the Runoff or identified in this study. The verifiability and availability for recount of this category of ballots imposes a significant level of deterrence to any systemic fraud involving them.

From a statistical standpoint, both campaigns ran influential appeals for mail-in votes between the Special Election and the Runoff. During the Special Election, the Ossoff team conducted a highly successful mail-in campaign that garnered over 76 percent of the total mail-in vote. Statistically his campaign increased his volume of mail-in votes by over 250 percent for the Runoff. However, in terms of vote-share percentage, the mail-in effort was not as successful, since his share of the mail-in vote decreased over by 10 percent.

Handel's mail-in campaign for the Runoff may have been strengthened by a decision to include mail-in applications attached to at least one of her flyers. The flyer included a pre-addressed mail-in ballot application that could be filled out quickly by a recipient and mailed to the local county office once the recipient affixed postage. Although the Ossoff team also ran a strong mail-in campaign, they did not use this particular technique.

(See Exhibit 6)

The Republican mail-in vote totals increased almost 600 percent from the Special Election to the Runoff, resulting in more than a 13 percent net gain in mail-in vote share, as shown:

	Special	Runoff	Net % Gain	Total Vote Gain%
<b>Democrats</b>	77.94%	64.18%	-12.47%	252.08%
<b>Republicans</b>	21.98%	35.82%	13.84%	596.68%
<b>Independents</b>	.08%			

In addition, Handel's mail-in votes increased by a factor of more than 20 from her own low baseline in the Special Election to the Runoff. These statistics effectively argue against the unfounded supposition that the disparity between mail-in and Election Day vote counts in the Runoff may be attributable to a major difference in Runoff mail-in campaigns.

### Mail-in Voter Turnout Analysis

In the GA6 Runoff 28,146 mail-in votes were counted, compared to 6583 votes in the GA6 Special Election. That represents a mail-in voter turnout increase of over 327 percent. The increase may be attributable to stronger mail-in campaigns by both parties in the Runoff and particularly a stronger Republican mail-in campaign that nearly doubled the percentage increase for Democrats. . An additional factor may be the heightened focus on the election and its outcome during the two-month period between the Special on April 18 and the Runoff on June 20 during which mail-in ballots might be cast for the Runoff.

### Mail-In Voter Party Affiliation

Georgia tracks party affiliation by primary voting history. To assess party affiliation of Runoff mail-in voters, VoterGA submitted Open Records Requests to acquire the mail-in application list for the Runoff election and the primary voting records for the 2014 and 2016 primaries. The mail-in application list identifies the applications processed and the accepted, canceled, rejected and spoiled ballots that can be used to compile party affiliation statistics.

The Voter Registration ID was matched across both lists to determine the party affiliation from the primary voting history for as many mail-in voters as possible. If any of these voters voted in both a Democratic and Republican primary they were classified as independents. Independents were a very small group of about 2 percent of the total affiliated. Remaining voters who voted in at least one Democratic or Republican primary (but not the other) were categorized as a Democrat or Republican voter, respectively.

Using this method, we were able to link over 9,000 of the 28,000 mail-in votes and thereby establish a party affiliation for nearly 30 percent of the mail-in votes cast. That quantity of mail-in records matching a 2014 or 2016 primary is almost six times larger than a standard 5 percent sampling rate. The results show that 60.94 percent of the identifiable Runoff mail-voters identified as voting for Republicans only, while 39.06 percent identified as voting for Democrats only:

	Party Affiliated Runoff Voters
Democrat	39.06%
Republican	60.94%

These percentages can be used in the three scenarios previously explained in the Introduction:

1. Affiliated Party Line Vote
2. Shared Party Ratio
3. Split Unaffiliated Vote



### Mail-in Affiliated Party Line Vote Scenario

If all party affiliated mail-in voters voted for the candidate of their party there would be no crossover. In that scenario the Ossoff margin for the remaining unaffiliated mail-in voters without a history would have to dramatically increase in order to produce the overall recorded results. His margin for those voters would be over 10 points higher than his current landslide margin in actual mail-in results as shown in this projection:

	Known Affiliated Party	Unaffiliated Needed Without Crossover	Actual Mail-In
<b>Ossoff</b>	39.06%	74.53%	64.18%
<b>Handel</b>	60.94%	25.47%	35.82%

Such a lopsided Ossoff advantage would argue against the reported Special Election and Runoff results that identified a much stronger Republican voter turnout in the Runoff.

The large amount of unaffiliated votes needed to achieve the actual mail-in voting results may indicate that the voter turnout increase for Democrats in the Runoff is much higher than the voter turnout increase for Republicans. This differs from the reported results that imply a larger Republican voter turnout increase for the Runoff.

### Mail-In Shared Party Ratio Scenario

If the affiliated party ratio for mail-in voters with a primary voting history is extrapolated to unaffiliated and independent mail-in voters, a potential net mail-in crossover percentage must be projected to achieve the actual mail-in results. The potential net crossover percentage can be projected by subtracting the known affiliated total percentages from the total mail-in voter percentages. In this scenario the potential net mail-in crossover percentage necessary to achieve the reported mail-in results would be over 25 percent for the entire affiliated pool as shown:

	Total Mail-in	Known Affiliated	Cross Over
<b>Ossoff / Democrats</b>	64.18%	39.06%	25.12%
<b>Handel / Republicans</b>	35.82%	60.94%	-25.12%

It is not feasible that Karen Handel could have defeated Jon Ossoff with such a high percentage of Republicans crossing over to vote for him even considering the district's history showing Rep. Tom Price winning the GA6 seat handily by an average 63.5 to 36.5 percent margin in the 2012-2016 elections.

### Mail-in Unaffiliated Split Vote Scenario

If the candidates equally split the votes from unaffiliated mail-in voters who have no primary voting history a different cross over percentage would apply. The table below shows that a crossover rate of 59.58 percent from Republicans to Ossoff would still be needed for the smaller affiliated pool to achieve the reported total mail-in results:

	<b>Affiliated Party</b>	<b>Unaffiliated Vote share</b>	<b>Affiliated % Needed</b>	<b>Total Mail-In Results</b>	<b>Cross%</b>
<b>Ossoff</b>	39.06%	50%	98.64%	64.18%	59.58%
<b>Handel</b>	60.94%	50%	01.36%	35.82%	-59.58%

These large potential net crossover percentages argue against the reported Special Election and Runoff results. The reported results implied that there was no Republican to Ossoff crossover and if any crossover occurred it was in the other direction. The verifiable mail-in votes dramatically show just the opposite in the split unaffiliated mail-in vote scenario, which is an impossible crossover rate for Handel to overcome.

### RUNOFF ELECTRONIC VOTING

#### Early Voter Turnout Analysis

In the GA6 Runoff 114,771 early votes were cast, compared to 50,262 early votes in the GA6 Special Election. That represents a voter turnout increase of over 128 percent. This increase is mostly attributable to the opening of more early voting polling locations in Fulton and DeKalb counties.

#### Early Voter Party Affiliation

Applications are printed at the polling location for each early voter and for each overseas voter sent an early-voting ballot. Ballot status is recorded for these voters in the same manner as for mail-in voters. The same methodology employed to determine the mail-in crossover percentage can also be used to establish a potential crossover percentage for early voters based on primary voting records for the 2014 and 2016 primaries.

Using the same method employed for mail-in voters, we were able to link over 38,000 of the 114,000 early votes and thereby establish party affiliation for 33.42 percent of the early votes cast.

The results show that 71.03 percent of the identifiable Runoff early voters previously voted for Republicans only, while 28.97 percent of the early voters previously voted for Democrats only:

	Party Affiliated Early Voters
<b>Democrat</b>	28.97%
<b>Republican</b>	71.03%

#### Early Voter Party Line Vote Scenario

If all party affiliated early voters voted for the candidate of their party there would be no crossover. In that scenario, the Ossoff margin for the remaining unaffiliated early voters without a history would dramatically increase. His margin would be over 10 points more than his reported margin in actual early voting results as shown:

	Known Affiliated Party	Unaffiliated Needed without Crossover	Actual Early
<b>Ossoff</b>	28.97%	61.13%	50.67%
<b>Handel</b>	71.03%	38.87%	49.33%

Such a landslide Ossoff advantage for nearly two thirds of the early voters would be highly unlikely given the reported Runoff results implying that Ossoff barely edged Handel in early voting. It also argues against the reported results that identified a much stronger Republican early voter turnout in the Runoff.

The large amount of unaffiliated votes needed to achieve the actual early voting results may indicate that the voter turnout increase for Democrats in the Runoff is much higher than the voter turnout increase for Republicans. This differs from the reported results that imply a larger Republican voter turnout increase percentage for the Runoff.

### Early Voter Shared Party Ratio Scenario

If the affiliated party ratio for early voters with a primary voting history is extrapolated to unaffiliated and independent early voters, a potential net early crossover percentage must be projected to achieve the actual early voting results. The potential net crossover percentage can be projected by subtracting the known affiliated total percentages from the total early voter percentages. In this scenario the potential net early voting crossover percentage necessary to achieve the reported early voting results would be over 21 percent for the entire affiliated pool as shown:

	Total Early	Known Affiliated	Cross Over
Ossoff / Democrats	50.67%	28.97%	21.70%
Handel / Republicans	49.33%	71.03%	-21.70%

Crossover rates should vary only slightly by voting type. It is not feasible that Karen Handel could have defeated Jon Ossoff with such a high percentage of Republicans crossing over to vote for him even considering the district's history showing Rep. Tom Price winning the GA6 seat handily by an average 63.5 to 36.5 percent margin in the 2012-2016 elections.

### Early Voter Unaffiliated Split Vote Scenario

If the candidates equally split the votes from unaffiliated early voters who have no primary voting history a different cross over percentage would apply. The table below shows that an implausible crossover rate of 23.08 percent from Republicans to Ossoff would still be needed for the smaller affiliated pool to achieve the reported total early voting results:

	Affiliated Party	Unaffiliated Vote share	Affiliated % Needed	Total Early Results	Crossover %
Ossoff	28.97%	50%	52.06%	50.67%	23.08%
Handel	71.03%	50%	47.94%	49.33%	-23.08%

When unverifiable early votes replace verifiable mail-in votes that were collected during roughly the same time period, it becomes clear that the actual reported early vote-count totals are disproportional to the actual party affiliation ratio. The electronic early vote-count totals disproportionately favor Handel over Ossoff by thousands of votes.

Republicans amassed a 10 point advantage in affiliated early voters over affiliated mail-in voters in the Runoff. However, the unverifiable voting machines recorded a 13.5 point Handel advantage over mail-in totals. That difference alone affects about 8,000 votes in an election that was decided by just over 9,000:

Actual Statistics	Affiliated Mail-in Voters	Affiliated Early Voters	Affiliated Difference	Mail-in Results	Early Vote Results	Results Difference
Ossoff/Democrats	39.06%	28.97%	-10.09%	64.18%	50.67%	-13.51%
Handel/Republicans	60.94%	71.03%	10.09%	35.82%	49.33%	13.51%

But the 10 point Republican turnout advantage should have produced less than an 8 point additional Handel margin in total early results once the crossover rates of 20% or more as defined in this section are applied to both candidates' share of the turnout. Thus, in that scenario the electronic voting machines recorded over 5 points more votes for Handel and over 5 points less votes for Ossoff than what would normally be anticipated. A 5 point difference for each candidate roughly represents over 11,400 votes or enough to change the outcome of the Runoff, which was decided by less than 9,300 votes. Even if we cut the crossover rate in half to 4.5 percent difference for each candidate there is still a 10,300 vote difference in the outcome, which is enough to reverse the election on this early vote difference alone.

### Election Day Turnout Analysis

In the GA6 Runoff 116,803 Election Day votes were counted, compared to 135,302 votes in the GA6 Special Election. That represents a voter turnout decrease of over 13 percent that closely matches the decline in votes for Ossoff. Although Handel's turnout increased dramatically, the total Republican turnout declined from the Special Election to the Runoff in a manner that is consistent with those decreases. The decreases are isolated to Fulton and DeKalb counties where more early voting polling locations were opened for the Runoff. Thus, a shift from Election Day voting to early voting occurred as shown:

	<b>Election Day Runoff Turnout</b>	<b>Early Vote Turnout Gain%</b>
<b>Ossoff</b>	-13.10%	86.67%
<b>Republicans</b>	-12.88%	204.67%

The reported Election Day Runoff results present a large Handel 58-42 percent victory margin. That is a dramatic reversal different and reversed from the Ossoff verifiable mail-voting margin. The Election Day margin also shows a reversed and major deviation from the Ossoff early voting margins.

### Election Day Voter Party Affiliation

Voter Registration Identification Numbers for voters who voted are posted on the SOS web site after an election has been completed. Election Day voters can be derived from that list by ignoring the provisional, supplemental and mail voters that also include the early voters in an election.

Using the same method employed for mail-in voters, we were able to link nearly 30,000 of the 116,000 Election Day votes and thereby establish party affiliation for about 26 percent of the Election Day votes cast.

The results show that a remarkable 82.91 percent of the identifiable Runoff early voters previously voted for Republicans only, while 17.09 percent of the early voters previously voted for Democrats only:

	<b>Party Affiliated Election Day Voters</b>
<b>Democrat</b>	17.09%
<b>Republican</b>	82.91%

### Election Day Affiliated Party Line Vote Scenario

If all of the party affiliated Election Day projected voters voted for the candidate of their party, there would be no crossover. In that scenario, the Handel margin decreases by nearly 10 points to the degree where Ossoff actually has more of the unaffiliated Election Day voters than Handel as shown:

	Affiliated Party	Unaffiliated Needed without Crossover	Actual Election Day Vote Count
<b>Ossoff</b>	17.09%	50.32%	41.84%
<b>Handel</b>	82.91%	49.68%	58.16%

Such an Ossoff advantage for two thirds of those Election Day voters argues against the reported Runoff results that show Handel with a huge Election Day margin. The large amount of unaffiliated votes needed to achieve the actual Election Day voting results may indicate that the voter turnout increase for Democrats in the Runoff is much higher than the voter turnout increase for Republicans. This differs from the reported results that imply a larger Republican voter turnout increase for the Runoff.

### Election Day Shared Party Ratio Scenario

If the affiliated party ratio for Election Day voters with a primary voting history is extrapolated to unaffiliated and independent early voters, a potential net Election Day crossover percentage must be projected to achieve the actual Election Day voting results. The potential net crossover percentage can be projected by subtracting the known affiliated total percentages from the total Election Day voter percentages. In this scenario the potential net Election Day voting crossover percentage necessary to achieve the reported Election Day results would be over 24 percent for the entire affiliated pool as shown:

	Total Election Day	Affiliated Party	Crossover%
<b>Ossoff</b>	41.84%	17.09%	24.75%
<b>Handel</b>	58.16%	82.91%	-24.75%

Crossover rates should vary only slightly by voting type. It may not be feasible that Handel could have defeated Ossoff with such a high crossover rate of Republicans voting for him during other types of voting.

### Election Day Unaffiliated Split Vote Scenario

If the candidates equally split the votes from the projected unaffiliated Election Day voters who have no primary voting history a different cross over percentage would apply. The table below shows that the crossover rate goes to near zero for the smaller affiliated pool to achieve the reported total Election Day results:

	Affiliated Party	Unaffiliated Vote share	Affiliated Needed	Total Election Day Results	Cross%
<b>Ossoff</b>	17.09%	50%	18.04%	41.84%	0.95%
<b>Handel</b>	82.91%	50%	81.96%	58.16%	-0.95%

Unlike early voting, the affiliation differences and results differences between mail-in voting and Election Day voting are within a half point of each other as shown:

Actual Statistics	Affiliated Mail-in Voters	Affiliated Election Day	Affiliated Difference	Mail-in Results	Election Day Results	Results Difference
<b>Ossoff/Democrats</b>	39.06%	17.09%	-21.97%	64.18%	41.84%	-22.34%
<b>Handel/Republicans</b>	60.94%	82.91%	21.97%	35.82%	58.16%	22.34%

However, it should be noted that the Election Day vote-counts reflect no crossover votes from Republicans to Ossoff whatsoever and even imply a slightly opposite trend. Of the 22 point Republican advantage in affiliated Election Day voters relative to mail-in voters we would expect to see a two or three point crossover swing from Handel to Ossoff based on the trends established in mail-in and early voting. This analysis does not attempt to determine the reasons for the lack of crossover because the initial differences are very small and Election Day votes were collected during a different time period than mail-in and early votes.



### OVERALL VOTING ANALYSIS

As previously mentioned the GA6 Runoff had a voter turnout increase of 35.18 percent over the Special Election. One of the most fundamental questions to answer about the GA6 Runoff is who benefited from that increased turnout. This voter turnout analysis is based on intrinsic election data with actual party affiliation voting history of Runoff voters. The overall turnout can be analyzed for each of the three scenarios by combining the statistics from the mail-in, Election Day and early voting vote types.

#### Overall Voter Party Affiliation

Using the same method employed for mail-in voters, we were able to link nearly 77,000 of the 260,000 Runoff votes cast and thereby establish party affiliation for nearly 30 percent of the overall Runoff voters.

The results show that 74.63 percent of the total identifiable Runoff voters previously voted for Republicans only, while 25.37 percent of the early voters previously voted for Democrats only:

	Party Affiliated Early Voters
<b>Democrat</b>	25.37%
<b>Republican</b>	74.63%

#### Overall Affiliated Party Line Vote Scenario

If all party affiliated voters voted for the candidate of their party there would be no crossover. In that scenario, the Ossoff margin for the remaining unaffiliated voters without a history would dramatically increase. His total unaffiliated vote percentage would be nearly 10 points more than his reported vote count and Handel's would be nearly 10 points less:

	Affiliated Party	Unaffiliated Needed without Crossover	Actual Results
<b>Ossoff</b>	25.37%	57.53%	48.22%
<b>Handel</b>	74.63%	42.47%	51.78%

Such a near landslide Ossoff advantage for nearly two thirds of the total voters argues against the reported Runoff results implying that Handel defeated Ossoff by 3.76 points. The large amount of unaffiliated votes needed to achieve the total voting results may indicate that the voter turnout increase for Democrats in the Runoff is much higher than the voter turnout increase for Republicans. This differs from the reported results that imply a larger Republican voter turnout increase for the Runoff.

### Overall Shared Party Ratio Scenario

If the affiliated party ratio for all voters with a primary voting history is extrapolated to the unaffiliated and independent voters, a potential net early crossover percentage must be projected to achieve the actual voting results. The potential net crossover percentage can be projected by subtracting the known affiliated total percentages from the total voter percentages. In this scenario the potential net voting crossover percentage necessary to achieve the overall reported results would be over 22 percent for the entire affiliated pool as shown:

	Actual Results	Actual Affiliated	Crossover
<b>Ossoff / Democrats</b>	48.22%	24.77%	22.85%
<b>Handel / Republicans</b>	51.78%	75.23%	-22.85%

It is not feasible that Karen Handel could have defeated Jon Ossoff with such a high percentage of Republicans crossing over to vote for him even considering the district's history showing Rep. Tom Price winning the GA6 seat handily by an average 63.5 to 36.5 percent margin in the 2012-2016 elections.

### Overall Unaffiliated Split Vote Scenario

If the candidates equally split the votes from all unaffiliated voters who have no primary voting history a different cross over percentage would apply. The table below shows that a crossover rate of over 18 percent from Republicans to Ossoff would still be needed for the smaller affiliated pool to achieve the reported total results which Handel reportedly won:

	Affiliated Party	Unaffiliated Vote share	Affiliated Needed	Total Runoff Votes	Crossover%
<b>Ossoff</b>	25.37%	50%	43.66%	48.22%	18.30%
<b>Handel</b>	74.63%	50%	56.33%	51.78%	-18.30%

It is not feasible that Karen Handel could have defeated Jon Ossoff with such a high percentage of Republicans crossing over to vote for him.

### Special Election vs. Runoff Comparative Analysis

In the GA6 Runoff 260,316 votes were counted, compared to 192,569 votes in the GA6 Special Election. That represents a voter turnout increase of 35.18 percent. In the Special Election, 11 Republican candidates garnered 50.97 percent of the vote while four Democrats took 48.92 percent and two Independent candidates received 0.9 percent of the votes. In the Runoff, Jon Ossoff's totals remained flat and showed less than a tenth of a percentage increase from 48.13 percent to 48.22 percent. Karen Handel's totals went from 19.77 percent to 51.78 percent.

The 1,704 other Democrat and Independent votes are statistically inadequate for analysis. However, the block of 60,000 other Republican votes that comprise over 30 percent of the total Special Election votes cast is more than sufficient. Reported results indicate that this block voted exclusively for Handel in the Runoff with no crossover gain whatsoever for Ossoff. The reported Runoff results even imply a crossover in the opposite direction if turnout was equal.

The early voting percentage for Ossoff decreased by over 11 percent in all three counties between the Special Election and the Runoff, although he was competing against 17 candidates in the Special Election and only one candidate in the Runoff. There was no comparable uptick in his Mail-in or Election Day vote counts to indicate a constituent vote-type shift as an explanation. Fulton and DeKalb counties opened several additional early voting poll locations for the Runoff, thus increasing early voting percentages. The reported results do not reflect these conditions and give the impression that some early votes for Ossoff just disappeared.

(See Exhibit 10)

A previous section established a potential verifiable Runoff net crossover rate of up to 25 percent from Republican leaning voters to Ossoff. The crossover pattern calculations included previous primary voters who were part of the increased voter turnout. The previous turnout analysis sections show that if the defined crossover rate is not applied to the unaffiliated two thirds of voters then the unaffiliated voting block must reflect unrealistic landslide margins for Ossoff to achieve the reported election voting results. Such landslide margins would be driven by increased Democrat voter turnout for the Runoff which argues against the reported results that imply an increased Republican voter turnout.

Such a clean Handel sweep of opponent votes could only be achieved by a significant gain in Republican voter turnout in the 35 percent increase for the runoff. However, the actual party affiliation statistics, representing 30 percent of the total vote, show a 3 point Democrat to Republican shift. Statistical evidence indicates that Ossoff was more likely than Handel to gain a greater share of unaffiliated votes, which represent the other 70 percent of the total votes.

Thus, the increase in Republican Runoff turnout is somewhat dubious. If Handel and Ossoff evenly split the “new” voters, Handel would have to pick up 105% of her Special Election Republican opponent votes or 102% of the votes from all her Special Election opponents, including Democrats and Independents. (See note)

Special Election Votes	Runoff Total Votes	Turnout Gain	Handel New Split	Handel Total Runoff	Handel Special Election	Special Republican Opponents	Handel Runoff - Handel Special - Handel Split	Percent Diff
192,569	260,316	67,747	33,873	134,799	38,071	60,121	62,855	105%

**Note:** Subtract total Special Election votes from total Runoff votes to get Turnout Gain. Divide that by 2 to get the Handel new voter split of gain. Subtract Handel new voter split and Handel Special Election votes from her total Runoff votes. Compare that number with her Special Election total votes as a projected percentage:

As miraculous as such a feat would be, it is made still more improbable when we take into account what the crossover analyses revealed: that either core Republican voters were crossing over to Ossoff in large numbers or unaffiliated (i.e., new to this election or not motivated to vote in party primaries) voters broke for Ossoff in landslide proportions. Under either of those scenarios (some combination of which was revealed to be inescapable by the crossover analysis of mail-in and early voting), an even split of the “new” Runoff voters (who had not participated in the April 18 Special Election) would have been a major stretch for Handel—necessitating an ever more impossible pick up of a proportion increasingly exceeding 100 percent of the votes cast for all her and Ossoff’s Special Election opponents.

The well-known political strategies of the two campaigns add further to the dubious nature of Handel picking up large blocks of unaffiliated voters. Her campaign focused on getting out the vote for existing Republicans who had historically given former U.S. Congressman Price a near two-to-one victory margin in the previous three GA6 elections. The Ossoff campaign ran a large outreach program with many house parties to meet independent 6<sup>th</sup> District voters face to face. His campaign registered roughly 100 new voters per day including about 8,000+ new voters during the April and May court-ordered extended registration period. 6<sup>th</sup> District Republican campaign leaders acknowledge that there was likely a net Republican loss on crossover but were unconcerned because they only needed to focus on the existing strong Republican base.

Ossoff supporters enthusiastically campaigned into and through the Runoff as the race intensified. Core Republican supporters were much more enthusiastic about having 11 Special Election candidates than when their candidate did not advance to the Runoff. Many were particularly apathetic about Handel after her series of hostile corruption allegations against Nathan Deal during their 2010 Republican gubernatorial primary.

### SUMMARY OF FINDINGS

The previous statistical analysis sections identify evidence indicating the reported results for the unverifiable Election Day and early voting may be either correct or incorrect. This section identifies supporting conditions that cannot be statistically evaluated for those alternatives.

#### Statistics Indicating Result Correctness

The identified statistical evidence indicating the reported unverifiable Election Day and early voting results may be correct includes:

1. The Runoff results are reasonably consistent across county boundaries, thus indicating that any significant localized fraud, tampering or error is unlikely;
2. The total percentages of votes cast for Democrats and Republicans in the Special Election and the Runoff are within 1 percent of each other and thus show some consistency although they cannot be verified;
3. The total percentages of early votes cast for Democrats and Republicans in the Runoff decreased consistently when more early voting poll locations were opened in Fulton and DeKalb counties;
4. Jon Ossoff's vote percentage decreased consistently from the Special Election to the Runoff across mail-in, early voting, and Election Day voting types and thus Handel's victory could be attributable to increased Republican voter turnout.
5. When actual Election Day vote totals are compared with the Election Day voter Party Affiliation the amount of difference is closely aligned with the same comparison for verifiable mail-in voters
6. The Republican to Democrat ration of affiliated party voters increased slightly from the Special Election to the Runoff

#### Conditions that Support Result Correctness

Conditions that have no mechanism for statistical analysis but support statistics indicating that the reported election results correct are:

1. GA6 is heavily oriented toward Republicans, as demonstrated by Tom Price winning the last three elections by an average margin of 63.5 percent to 36.5 percent (though Donald Trump took GA6 by only a 2 percent margin in November 2016);
2. Late polls conducted during the last few days of the Runoff campaign indicated a slight trend in percentages from Jon Ossoff, the consistent poll leader, to Karen Handel.

### Statistical Disparities Indicating Results are In Doubt

The statistical analysis defines serious disparities between the verifiable and unverifiable reported results. It also cites statistical evidence that rebut unsubstantiated speculation as to why the disparities exist. These disparities and statistical evidence that cast doubt on the accuracy of the election results are categorized as follows:

#### Unverifiable vs. Verifiable Vote Counts

1. While Karen Handel was pronounced winner of the unverifiable GA6 Runoff, *Jon Ossoff* won verifiable mail-in voting, representing over 10 percent of the total votes cast, by a landslide 64.16 percent to 35.64 percent margin;
2. The only other type of verifiable votes cast, the provisional votes, corroborate the mail-in vote totals as Ossoff won provisional voting by a landslide 73 to 27 percent margin;
3. The verifiable votes cast, representing 11.04 percent of the total votes, show Ossoff with a 64.37 to 35.63 percent margin while the unverifiable votes, representing 88.96 percent of the votes cast show a 53.79 to 46.21 percent Handel margin;

#### Precinct Deviation Analysis

1. 174 of 208 precincts had 20+ point swings between the mail-in vote margin and the Election Day vote percentage (e.g. 55 to 45 percent vs. 45 to 55 percent; 65 to 35 percent vs. 55 to 45);
2. 116 precincts had 40+ point swings between the mail-in vote margin and the Election Day vote margin (e.g. 60 to 40 percent vs. 40 to 60 percent; 55 to 45 percent vs. 35 to 65 percent);
3. 41 precincts had 60+ point swings between the mail-in vote margin and the Election Day vote margin (e.g. 65 to 35 percent vs. 35 to 65 percent; 75 to 25 percent vs 45 to 55 percent);
4. In only three full GA6 precincts did the swing from mail-in vote margin to Election Day margin favor Ossoff and none reached a 20 point total swing.

#### Mail-in Voting Analysis

1. The historical analysis of mail-in voters shows Republicans averaged an 11 point greater margin of victory by mail than the overall election victory margin, thus refuting unfounded speculation that Ossoff's large mail-in voting margin in the GA6 Runoff reflected a normal trend of GA6 Democratic leaning voters to vote by mail;
2. The strong mail-in statistical improvement from the Special Election to the Runoff for Karen Handel relative to both her own individual showing and the collective showing of all Republican candidates among Special Election mail-in voters, refute unfounded

speculation that the Ossoff Runoff mail-in campaign was far superior to the Handel Runoff mail-in campaign;

3. The actual primary voting history of Runoff mail-in voters shows that there were more previous Republican affiliated voters than Democratic affiliated voters by a 58 to 41 percent margin, thus refuting speculation that Ossoff's large mail-in voting margin was achieved because far more Democrats than Republicans voted in the Runoff by mail;
4. The mail-in historical analysis, mail-in primary voting affiliation analysis, and mail-in party campaign strength statistics corroborate each other's findings;
5. There is no other known statistical evidence to explain the difference between potentially verifiable mail-in vote counts and unverifiable electronic vote counts

### Mail-in Voter Turnout Analysis

1. If unaffiliated mail-in voters had the same Republican and Democratic ratios as affiliated mail-in voters established from their 2014 and 2016 primary voting history, a potential net crossover rate of over 25 percent from Republican voters to Jon Ossoff would be required for the entire affiliated pool to achieve the reported mail-in results;
2. If all affiliated mail-in voters voted according to their 2014 and 2016 primary voting history (i.e., party line, zero crossover), Ossoff would have captured unaffiliated mail-in voters by a 75-25 percent margin, 10 points higher than the reported mail-in results;
3. If Handel and Ossoff equally split unaffiliated mail-in voters a potential net crossover rate of nearly 60% percent from Republican voters to Jon Ossoff would be required for the smaller affiliated pool to achieve the reported mail-in results;
4. Based on actual Runoff results and historical GA6 elections, It is not feasible that Karen Handel could have won the GA6 Runoff by 3.76 points with a 25 percent or higher Republican to Ossoff verifiable crossover rate;
5. It is unlikely that Ossoff could have garnered 75 percent of all unaffiliated mail-in votes to achieve the reported results and overcome party line voting when Republicans had a 61 to 39 percent turnout advantage among affiliated mail-in voters.

### Early Voter Turnout Analysis

1. If unaffiliated early voters had the same Republican and Democratic ratios as affiliated early voters established from their 2014 and 2016 primary voting history, a potential net crossover rate of over 21 percent from Republican voters to Jon Ossoff would be required for the entire affiliated pool to achieve the reported early voting results;
2. If all affiliated early voters voted according to their 2014 and 2016 primary voting history (i.e., party line, zero crossover), Ossoff would have captured the unaffiliated early voters by a 61 to 39 percent margin, 10 points higher than the reported early voting results;

3. If Handel and Ossoff equally split unaffiliated early voters, a potential net crossover rate of over 23 percent from Republican early voters to Ossoff would be required for the smaller affiliated pool to achieve the reported early voting results;
4. It is not feasible that Handel could have won the Runoff if there was a 21 percent or higher Republican to Ossoff early voting crossover rate and comparable crossover rates for the other types of voting;
5. It is not feasible that Ossoff could have reached a 61 to 39 percent margin of unaffiliated early votes to achieve the reported results and overcome party line voting when Republicans had a 71 to 29 percent turnout advantage among affiliated early voters;
6. When unverifiable early votes replace verifiable mail-in votes that were collected during the same time period the actual electronic vote-count totals change disproportionately to the actual party affiliation in favor of Handel over Ossoff. The 7 point total swing favoring Handel and slighting Ossoff is significant enough when crossover is applied to indicate a potential vote manipulation that may have changed the Runoff outcome.

### Election Day Voter Turnout Analysis

1. If unaffiliated Election Day voters have the same Republican and Democrat ratios as the affiliated Election Day voters established from the 2014 and 2016 primary voting history a potential net crossover rate of over 24 percent from Republican voters to Jon Ossoff for the entire affiliated pool would be required to achieve reported Election Day results;
2. If the affiliated Election Day voters voted according to their 2014 and 2016 primary voting history (i.e., party line, zero crossover), Ossoff would have captured the unaffiliated Election Day voters with just over 50 percent of their votes or about 8.5 points higher than the reported Election Day results;
3. If Handel and Ossoff equally split the projected unaffiliated Election Day voters a potential net crossover rate of just under 1 percent from Republican Election Day voters to Jon Ossoff for the smaller affiliated pool would be required to achieve the reported Election Day results;
4. It is not feasible that Handel could have won the Election Day votes by a 58 to 41 percent margin if there was a 24 percent Republican to Ossoff crossover rate;
5. It is not feasible that Handel could have won Election Day voting by a 58 to 41 percent margin if Ossoff garnered a majority for unaffiliated Election Day voters that are estimated to be nearly two thirds of the total Election Day voters;
6. If the candidates split unaffiliated votes equally, it is unlikely that the crossover rate would have dropped from over 20 percent for early voting and verifiable mail-in voting to near zero for Election Day voting;



### Overall Turnout Analysis

1. If unaffiliated Runoff voters have the same Republican and Democratic ratios as the affiliated voters established from 2014 and 2016 primary voting history a potential net crossover rate of over 27 percent from Republican voters to Jon Ossoff would be required for the entire affiliated pool to achieve the reported overall results;
2. If all affiliated Runoff voters voted according to 2014 and 2016 primary voting history (i.e., party line, zero crossover), Ossoff would have captured the unaffiliated Runoff voters by a 58 to 42 percent margin, 10 points higher than the reported overall results;
3. If Handel and Ossoff equally split unaffiliated early voters a potential net crossover rate of over 18 percent percent from Republican early voters to Jon Ossoff would be required for the smaller affiliated pool to achieve the reported overall results;
4. It is not feasible that Karen Handel could have won the Runoff if there was a 27 percent Republican to Ossoff crossover rate;
5. It is not feasible that Handel could have won the Runoff by 3.76 points if Ossoff overcame party line voting and achieved the results with a projected 58 to 42 percent margin among unaffiliated voters that represent nearly two thirds of the total voters
6. Based on actual Runoff results and historical GA6 elections, It is not feasible that Karen Handel could have won the GA6 Runoff by 3.76 points with a 18 percent or higher Republican to Ossoff combined crossover rate for all voting types;

### Conditions that Support Statistical Disparities

Conditions that have no mechanism for statistical analysis but support statistics indicating that the reported election results may be incorrect are:

1. The disparities between verifiable and unverifiable votes are unprecedented in the experience of the election forensics analysts who have reviewed these findings and compared them with other elections throughout the country;
2. There is no clear, benign rationale to explain the disparities between the verifiable mail-in vote-counts and unverifiable Election Day vote-counts recorded for the GA6 Runoff, unless consideration is given to the potential manipulation of unverifiable vote-counts, which is far easier and carries far less risk of detection than any attempt to manipulate potentially verifiable vote counts;
3. The verifiable statistics presented in this analysis are consistent with the GA6 Runoff polling that was conducted, while the reported results are not;
4. The reported GA6 Runoff results lack statistical support, since they are totally dependent upon votes that were not verified by the voter, cannot be audited by election officials, and cannot be recounted for candidates;
5. Georgia election data was vulnerable to the type of vote swapping hack that would have produced consistently incorrect results with the types of disparities found in this analysis across county boundaries;
6. When an internet security professional discovered the vulnerabilities of Georgia election data on a public CES web server and reported them to the CES Executive Director, they were neither mitigated nor reported to the office of the Secretary of State;
7. Procedures obtained from counties and CES via Open Records Requests indicate that the election data is downloaded by the counties when each election is prepped;
8. An external or internal attacker could implement a hack for the GA6 Runoff by compromising the exposed election data without the knowledge of state and county election officials, or possibly even the CES staff;
9. An attacker could have determined ballot positioning for such a hack as early as February 15, 2017, when qualifying closed. At that time, it was known that Democrat Jon Ossoff would likely make the Runoff and all viable Republican challengers would appear ahead of him alphabetically on the ballot.

Although not statistically relevant, this study has some obligation to mention the bizarre behavior of state elections officials in regards to the credibility and vulnerabilities of the Georgia voting system. In regards to the vulnerabilities, CES Executive Director Merle King:

- Allowed all key election data to be placed on a public web server that was exposed for access to virtually any bad actor operating from any foreign or domestic location;

- Failed to remediate the exposures after being notified of them;
- Chose not to inform the Secretary of State when he was notified of the exposure.

Secretary of State Brian Kemp has consistently opposed verifiable voting for years. Recently he:

- [Insisted](#) that the voting system did not malfunction after Fulton County election officials encountered system [security flaws](#) that allowed memory cards from the Roswell Runoff to be loaded into live 6<sup>th</sup> District Special Election results;
- Contended that Georgia elections are secure and refused to initiate action to replace the outdated voting system despite evidence to the contrary from dozens of computer scientists, election integrity advocates, local citizens and national news articles;
- Posted endorsements of Handel on [Facebook](#), [Twitter](#) and his social media [web site](#) that read in part: *"I look forward to working with Karen in the weeks ahead to ensure victory at the ballot box."*

State Elections Director Chris Harvey testified before the House Science and Technology Committee on October 22, 2017 where he:

- Stated that there have been no issues with Georgia voting systems despite the list of problems identified in the Appendix of this study, most of which occurred and were investigated after 2007 when Harvey became the Chief Investigator of the SOS office;
- Stated that Georgia code requires the use of DREs although Georgia code actually allows four different types of voting equipment to be employed;
- Stated he did not hear about problems with the voting system during the GA6 races although during the Special Election there was a two hour reporting delay and a shift in votes caused by voting machine security flaws as explained in a previous VoterGA [study](#).

GA6 Runoff candidate Karen Handel also demonstrated bizarre behavior concerning the voting system as both a SOS candidate, and as the former SOS in charge of the system. During that time Handel:

- Reneged on her pledge that: *"As Secretary of State I will establish a commission that includes both county and state elections officials to make recommendations regarding new purchases of electronic voting machines";*
- Reversed her position on replacing the voting system after writing a [report](#) to explain in writing the need for voter verification of their ballots, election audits and a paper audit trail as the ballot of record;
- Received over [\\$25,000 in donations](#) from family members and partners of the voting machine vendor lobbyist, Massey Bowers LLC and hired as Assistant SOS Massey Bowers partner, Rob Simms, who became a key fund raiser in her gubernatorial and U.S. Senate campaigns.

### CONCLUSIONS

#### Unverifiable Vote Verification

This analysis establishes *actual* party affiliation for Runoff voters by retrieving their primary voting history. It incorporates the actual affiliation into three different verification scenarios in an attempt to confirm the reported GA6 Runoff results are correct. The scenarios offer a range of possibilities **covering the spectrum of how unaffiliated Runoff votes may have been cast for the candidates**. The three verification scenarios --Affiliated Party Line Vote, Shared Party Ratio and Unaffiliated Vote Split--- cover a range that includes majority Republican, majority Democratic and an equal split of unaffiliated voters. As previously explained, no one verification scenario can plausibly confirm the reported results of a Handel 3.76 percent victory margin.

The reported results generated skepticism from several unprecedented conditions that they rendered. For example:

1. There is **no known precedent** for a Runoff participant gaining a percentage roughly equal to that of all 16 opponents from their previous election. Handel gained all 32 percent including small shares from 4 Democrats while Ossoff totals remained near flat;
2. There is **no known precedent** for a candidate losing part of their vote percentage in a county when advancing from an election with 17 opponents to a Runoff with one opponent. Ossoff's vote percentage decreased in Fulton and DeKalb counties after 16 of his competitors were eliminated.

The vast majority of votes for Special Election candidates who did not advance were Republican votes that were reported as going to Handel. However, no crossover votes from that 32 percent block of votes went to Ossoff according to the reported results. If there was no Republican crossover to Ossoff, then he had to have won all of the unaffiliated voting, representing 70% of the total Runoff votes, including landslide 75 to 25 percent and 61 to 39 percent margins for mail-in and early voting, respectively.

The reported results could only be correct if the increased voter turnout in the Runoff was decidedly more Republican and strongly favored Handel. However, the Ossoff margins of victory for unaffiliated votes as needed to achieve the reported results without crossover would require a heavier Democratic turnout than Republican.

### Verifiable vs. Unverifiable Vote Disparities

Disparities identified between potentially verifiable mail-in results and unverifiable electronic results are **unprecedented in electronic vote monitoring history**. For example:

1. There is **no precedent** for a candidate winning the verifiable mail-in voting by a 64 percent to 36 percent margin while losing an election. Runoff mail-in votes represent over 10 percent of the total vote and thus are a more than adequate statistical sample. The margin exceeds by almost 20 total swing points the 54.6 percent to 45.4 percent margin that Vic Rawl won in mail-in ballots when reportedly losing the 2010 South Carolina U.S. Senate Democratic primary to Alvin Greene;
2. Results from dozens of precincts showed unprecedented 60 total point swing reversals between potentially verifiable mail-in and unverifiable Election Day vote margins. The closest known corollary that could be considered similar are the results from the previously mentioned 2010 U.S. Senate Democratic primary that is considered to be **one of the most suspect electronic voting elections in U.S. history**;

This analysis statically refutes in three ways **unfounded speculation** that attempted to justify the disparities by assuming more Democrats voted via mail in the Runoff than Republicans:

1. **About 61 percent of actual GA6 Runoff mail-in voters previously voted for Republicans and not Democrats** in the 2014 and/or 2016 primaries, while only 39 percent of those voters voted for Democrats and not Republicans;
2. Historically, 11 percent more Republicans voters voted by mail than the margin of victory that Republicans had over Democrats in 2012, 2014 and 2016 GA6 elections;
3. Karen Handel ran a highly successful Runoff mail-in campaign that had a 596 percent Republican Party growth rate from the Special Election and more than doubled the Ossoff growth rate from his very successful Special Election mail-in campaign.

Some of the disparity between verifiable mail-in vote-counts and unverifiable electronic vote-counts recorded can be attributed to increased Republican voter turnout during early voting and on Election Day. However, **Ossoff attained a 64 to 36 percent margin in verifiable mail-in ballots in spite of a 61 to 39 percent Republican turnout advantage in affiliated mail-in voters.**

Ossoff attained a 51 to 49 percent margin in early voting ballots in spite of a 71 to 29 percent Republican turnout advantage in affiliated early voters. When unverifiable early votes are totaled in lieu of verifiable mail-in votes, the **vote-count totals become disproportional to the actual party affiliation**. Republicans amassed a 10 point advantage in affiliated early voters over affiliated mail-in voters in the Runoff. That advantage should have produced less than an 8 point Handel advantage in the total early results once the defined early voting crossover rates are applied. However, the unverifiable voting machines recorded a 13.5 point Handel advantage over mail-in totals, over 5 points more than would be expected:

Actual Statistics	Affiliated Mail-in Voters	Affiliated Early Voters	Difference	Mail-in Results	Early Vote Results	Difference
Ossoff/Democrats	39.06%	28.97%	-10.09%	64.18%	50.67%	-13.51%
Handel/Republicans	60.94%	71.03%	10.09%	35.82%	49.33%	13.51%

There is little explanation for the extra votes that the voting machines recorded for Handel and discounted from Ossoff. Therefore, consideration must be given to the potential manipulation of unverifiable vote-counts through a vote swapping hack. Although relatively small, the 5 point deviation for each candidate roughly represents over **11,400 votes or enough to change the outcome of the Runoff that was decided by less than 9,300 votes**. Even if we cut the crossover rate by more than half to 10% there is still a 10,300 vote difference in the outcome, which is enough to reverse the election on this early vote difference alone.

### Vulnerabilities

The primary evidence supporting the accuracy of the results is their consistency across county boundaries. **That consistency largely rules out localized tampering, fraud or errors**. However, it fits comfortably with the broader systemic interference scenario indicating that **GA6 Runoff results may have been altered at some point in the process between the time CES prepped the election and the time counties reported the Runoff results**.

Supporting such a possibility are the facts that show the Center for Election Systems (CES) left key election data needed to hack an election virtually **exposed on their public website without password protection**. That data was vulnerable to hacking for months while the elections were being prepped and perhaps even years before that. Such critical application data is normally placed on an internal application server protected by a firewall. In this case, however, **any**

**potential hacker could gain access to create, read, modify, delete or execute any data on the server** including the:

- Georgia voter registration data containing 6.7 million personally identifiable records
- GEMS county databases used to accumulate votes for elections
- PDFs of election server administration documents including supervisor passwords
- Windows executables used to create databases, export election results, etc.
- Training videos that explained to county users how to download files onto a memory card and insert it to update a voting system.

Although CES Executive Director Merle King was informed during the previous year about the vulnerabilities, **they were not remediated and he never informed the Secretary of State**. The Georgia voting system was vulnerable to the exact type of attack that can produce consistently incorrect results across county boundaries and present the types of disparities found in this analysis. Such a hack could swap votes between candidates without detection in a manner similar to that demonstrated by Dr. Ed Felten to the U.S. House Administration Committee in 2007. An external or internal attacker could plant such a hack that would not be detectable by state and county election officials, or possibly even CES personnel.

Open Records Requests show that **counties download election information from the CES web server for each new election**. Ballot positioning for a Runoff vote swap hack was determinable as early as February 15, 2017 when qualifying closed. At that time, it was known that Democrat Jon Ossoff would likely make the Runoff and all viable Republican challengers would appear alphabetically ahead of him on the ballot. Only one Republican unknown at the time was slated to appear after Ossoff. He received less than 1 percent of the Special Election vote.

Despite the critical nature of the exposed election data, there has still been **no public accountability** at the time of this writing for what has transpired. The public remains uninformed as to:

- Why CES created such an exposure that conflicts with basic internet design standards;
- How many years the exposure existed;
- How the vulnerabilities were remediated, if indeed they have been.

Given the potential vulnerabilities that may have existed in the Georgia voting system, there are at least three ways in which an external hacker could plant malware to change the GA6 runoff election results **without detection by state and county officials**. These include:

- Initiate precincts in the elections database with a certain amount of positive votes for one candidate and an equal number of negative votes for another candidate
- Deploy or modify a Windows executable to tell the system to swap votes from one candidate to another after a certain number of votes are counted (Ex: every 10<sup>th</sup> vote)
- Modify an express poll book file that is downloaded by the counties to flashcards used by poll books to create voter access cards that voters use on each voting machine

### Synopsis

Based on the disparities described in comparing actual party affiliation to actual reported results for all voting type totals, **it is statistically improbable that the reported results are correct.** Specifically, it is probable that an external (or internal) attacker planted malware in a way to transfer roughly 5 percent of early votes from Ossoff to Handel. Such an attack would explain most of the disparities uncovered in this analysis. The undetectable malware hack would have reduced Ossoff's early vote totals by 5 percent and increased Handel's early vote totals by 5 percent. **That deviation represents over 11,400 votes or enough to change the outcome of the Runoff that was decided for Handel by less than 9,300 votes.**

Without forensic data it would be presumptuous to infer what method an attacker may have employed to implement such malware. The methods could produce a vote shift that would be reflected in the early vote totals just as we observed. They could also produce a different residual vote shift on Election Day as we also observed. The attacker could have made the changes directly to an elections database or file that was exposed on the public web server. **The attacker could also potentially access other CES elections databases or files through firewall exceptions after testing the malware with the exposed elections databases and files.**

Election Day reported results are also suspect due to the huge 40+ point total swing deviation between verifiable mail-in and unverifiable Election Day results. However, there is insufficient data to determine whether the deviation was caused by vote manipulation or simply attributable to the remarkable Republican affiliated turnout that occurred on Election Day. Verifying the actual affiliated turnout is outside the scope of this analysis which is limited to determining whether or not the voting system counted correctly based on the actuals input it received. Therefore, this analysis concludes that it is more probable that Election Day reported results are correct and attributable to the strong 82 percent Republican affiliated turnout.

The analysis confirms early indications identified by election integrity monitors in their letter to county election boards prior to GA6 Runoff certification. The official results of the GA6 Special Runoff Election may be incorrect, to the point that **the election outcome appears to have been**



**affected.** The statistical patterns indicate a strong likelihood that the outcome of the GA6 Special Runoff Election was altered. Those alterations are to the extent that the outcome was likely reversed.

The disparities and related evidence that have been uncovered now place the burden on state and county election officials, and in particular Secretary of State Brian Kemp, to respond.

**VoterGA members call upon Secretary Kemp to immediately establish a public forum** where the answers to detailed questions raised by this study as well as other citizens can be fully answered. For example:

- Why did CES place GEMS election databases on a public web server?
- Why is there a 40+ total point swing between mail-in vote-counts and Election Day vote-counts in the GA6 Runoff?
- Why does the early vote disparity described in this study exist if the GA6 Runoff was not hacked?
- What specific answers and details can CES immediately provide to the public to prove that the GA6 Runoff was not hacked due to CES vulnerabilities?
- Why did the CES Executive Director fail to remediate the vulnerabilities and refuse to notify the Secretary of State when the vulnerabilities were discovered?

We further call upon state and county election officials to prove to Georgians that the reported Runoff results they have certified are actually correct and that no such attack took place. Sadly, that may be impossible with Georgia's current voting system.

### EXHIBITS

#### Exhibit 1 - 6<sup>th</sup> District Special Election [Results:](#)

Party	Candidate	%	Votes
	DAVID ABROMS	0.85%	1,639
	MOHAMMAD ALI BHUIYAN	0.22%	415
	RAGIN EDWARDS	0.26%	504
	KEITH GRAWERT	0.22%	415
	BOB GRAY	10.80%	20,802
	KAREN HANDEL	19.77%	38,071
	ALEXANDER HERNANDEZ	0.06%	121
	JUDSON HILL	8.76%	16,870
	RICHARD KEATLEY	0.12%	229
	AMY KREMER	0.18%	351
	BRUCE LEVELL	0.24%	455
	WILLIAM LLOP	0.17%	326
	DAN MOODY	8.84%	17,028
	JON OSSOFF	48.12%	92,673
	ANDRE POLLARD	0.03%	55
	REBECCA QUIGG	0.16%	304
	RON SLOTIN	0.25%	491
	KURT WILSON	0.95%	1,820
			192,569

#### Exhibit 2 – 6<sup>th</sup> District Runoff Election [Results:](#)

Last updated 6/26/2017 5:37:19 PM EDT PRINT SHARE

### RESULTS


★ U.S. Representative, District 6 Click to see the Contest Details Map

Counties/Precincts Reporting: 100 %

KAREN HANDEL (REP)	51.78%	134,799
JON OSSOFF (DEM)	48.22%	125,517

**Counties/Precincts Reporting**

■ Completely Reported 
 ■ Not Reporting 
 ■ Partially Reported



100%

COUNTIES COMPLETE 3/3

PRECINCTS COMPLETE 208/208

[See Counties Reporting](#)

**Voter Turnout**

TOTAL 58.18%

Ballots Cast 260,455

Registered Voters 447,826

### Exhibit 3 – Election Integrity Monitors [Letter](#) to County Election Boards:

June 23, 2017

Georgia State Election Board 214 State Capitol Atlanta, GA 30334  
Cobb County Board of Elections and Registration 736 Whitlock Ave NW #400  
Marietta, GA 30064  
DeKalb County Board of Registration and Elections 4380 Memorial Drive, Suite 300  
Decatur, GA 30032  
Fulton County Board of Registration and Elections 130 Peachtree St Suite 2186  
Atlanta, GA 30303

RE: Grave Concerns about the integrity of GA6 Special Runoff Election

Dear Election Board Members:

We the undersigned public advocates for accurate and transparent elections are writing to alert you to early indications that hacking or other tampering may have altered the results of the Sixth District Special Election Runoff held on June 20, 2017.

As you are aware, the majority of votes in the District are cast on direct record electronic (DRE) voting machines that produce no paper record. Therefore, the presence of statistical anomalies is key in assessing the accuracy of election results. Statistical review by qualified analysts has only begun, but red flags are already apparent.

The only verifiable votes cast in Georgia are the absentee mail-in ballots. Mail-in voters constitute a discrete subset of the total electorate for each election, and official records reveal a consistent pattern of mail-in voter partisanship in GA6. Historically and consistently, Republican voters (i.e., those casting their vote for the Republican candidate) in GA6 are more likely to vote by mail than are Democratic voters. In any given election, therefore, percentages for Republican candidates would be expected to be higher among mail-in voters than among the electorate as a whole.

However, in the Special Runoff Election, exactly the opposite occurred. The numbers weren't even close, with the Democratic candidate winning the absentee votes 64% to 36%, while reportedly losing the election 48% to 52%. The data, both historical and current, is a matter of public record.

### GA6 Special Election Concerns - 2

Again, this glaring disparity is especially significant because the votes cast on mail-in ballots are the *only votes that can be verified*. This means they can be recounted if any doubt exists as to their veracity. It also means mail-in votes are less likely to be tampered with, because:

a) tampering would be much easier to detect, and

b) mail-in votes make up such a small percentage of the total vote (just over 10% in this election) that tampering with them would, given the far greater risk factor, be neither a necessary nor desirable way to alter the results of an election.

When combined with known vulnerabilities of the systems in use, the known extended exposure of key election data stored in the Center for Elections' (CES) website at Kennesaw State University, and numerous tracking polls, emerging statistical patterns indicate a **strong likelihood that the outcome of the Special Runoff Election was altered.**

**In other words, the candidate for whom the most voters cast their ballots may have been declared the loser of the Special Runoff Election.**

Please understand that we are not claiming that the information in this letter *proves* either that the election results were tampered with or that they are inaccurate. DRE technology does not produce such proof. It also, notably, does not produce proof that the election results were *not* tampered with or are *accurate*. **This is precisely why DRE voting systems should be banned from use in U.S. elections.**

The information does, however, provide *significant evidence* that it is highly likely the unofficial results of the Special Runoff Election are incorrect, to the point that **the election outcome appears to have been affected.**

We declare that based on the above information, **there is no basis for public confidence in the election results of the GA6 Special Runoff Election.** Should you continue to stand by the reported results, we call upon you to **prove to Georgia's voters that the reported results are a true and accurate measure** of the votes cast by the voters of Georgia's Sixth Congressional District.

Sincerely,

John Brakey Executive Director and Co-founder, Americans United for Democracy Integrity & Transparency (AUDIT-Arizona)

Dr. Lora Chamberlain Organizer, Clean Count Cook County

### **GA6 Special Election Concerns - 3**

Bev Harris BlackBoxVoting.org

Phyllis Huster Ladies of Liberty

Mimi Kennedy Advisory Board Chair, Progressive Democrats of America

Ray Lutz Founder, Citizens' Oversight Projects

Mark Crispin Miller Professor of Media, Culture & Communication New York University

Dr. Laura Pressley, Ph.D. Founder, Save Our Texas Vote Coalition

Jonathan D. Simon Author, CODE RED: Computerized Election Theft in the New American Century

Jim Soper Co-Chair, Voting Rights Task Force Author, CountedAsCast.org

Paul Thomas Co-founder, Election Justice USA

*Organizations listed for identification purposes only.*

### Exhibit 4 – [VoterGA Letter](#) to County Election Boards:

**VoterGA**

DATE: June 23, 2017

Dear Election Board Members,

I am writing to express grave concerns about problems with the 6<sup>th</sup> District Special Election Runoff (GA6) held on June 20<sup>th</sup>. The unofficial election results have caused national election integrity experts to unanimously conclude that there is a cloud of doubt as to whether the results can possibly be correct. Here is some background:

1. Georgia has used unverifiable voting equipment [since 2002](#). Voters cannot verify the electronic record of their ballot, election officials cannot audit results independently for vote count accuracy, and recounts only reprint previous unverifiable results.
2. Several patches have been made and the system has not been fully re-certified since 2008. No Secretary of State has ever specifically certified any Georgia voting system for accuracy according to law. [\[O.C.G.A. § 21-2-279.2\]](#)
3. 20 computer science professors from throughout America have [explained](#) the problems with Georgia's voting machines to our Secretary of State and offered their assistance in helping to move Georgia to verifiable voting but they received no response
4. 10 different studies from states from Universities such as [Princeton](#), Johns Hopkins, Stanford and Georgia Tech as well as states such as Maryland, Ohio, California and Nevada have concluded that the AccuVote TS machines identical to the ones that we have security flaws use cannot safely and accurately conduct elections
5. Concern about GA6 election hacking heightened recently after voting machine files were left [exposed](#) indefinitely on the Center for Elections' (CES) web site at Kennesaw State University. CES prepared the ballots that are installed on every GA6 voting machine.
6. Voting machine security flaws were found in the April 18<sup>th</sup> GA6 election when a memory card from one election was loaded into the live election results of the GA6 election and the GEMS server did not detect it
7. The dramatic percentage differences between verifiable mail-in counts, early voting and Election Day counts indicate that there is a serious problem in the [unofficial results](#). In particular, they point to [questions](#) about the accuracy of the unverifiable machines used on Election Day

For these reasons and many more, I believe that there is risk to the county in certifying the election results until independent parties with the appropriate oversight can perform the proper forensics on the equipment to ensure that was operating properly.

Sincerely,  
Garland Favorito  
VoterGA.org  
404 664-4044 CL  
[Garland@msn.com](mailto:Garland@msn.com)

### Exhibit 5 – [Letter](#) from Computer Scientists to Secretary of State Brian Kemp

March 15, 2017

The Honorable Brian Kemp  
214 State Capitol  
Atlanta Ga. 30334

Dear Secretary Kemp,

On March 3<sup>rd</sup> it was reported that the Federal Bureau of Investigations is conducting a criminal investigation into an alleged cyber attack of the Kennesaw State University Center for Election Systems. According to the KSU Center for Election Systems' website, "the Secretary of State authorized KSU to create a Center for Election Systems, dedicated to assisting with the deployment of the Direct Record Electronic (DRE) voting technology and providing ongoing support."<sup>[1]</sup> The Center is responsible for ensuring the integrity of the voting systems and developing and implementing security procedures for the election management software installed in all county election offices and voting systems.

The Center has access to most if not all voting systems and software used in Georgia. It also is responsible for programming these systems and accessing and validating the software on these systems. It is our understanding that the Center also programs and populates with voter records the electronic poll books used in polling places statewide. A security breach at the Center could have dire security consequences for the integrity of the technology and all elections carried out in Georgia.

In order for citizens to have faith and confidence in their elections, transparency is crucial, including about events such as the KSU breach, and its extent and severity. While we understand that this investigation is ongoing and that it will take time for the full picture to emerge, we request that you be as forthcoming and transparent as possible regarding critical information about the breach and the investigation, as such leadership not only will be respected in Georgia but also emulated in other states where such a breach could occur. We expect that you are already pursuing questions such as the following, regarding the breach, and trust that you will make public the results of such inquiry:

1. Can you estimate when the attacker breached KSU's system?
2. How did the attacker breach KSU's system?
3. How was the breach discovered?
4. Which files were accessed?
5. Were any files accessed that related to software or "hashes" for the voting machines?
6. Is there any evidence that files were modified? If so, which files?

7. Had KSU begun ballot builds for the upcoming Special Election?
8. To whom are these attacks being attributed? Could this be an insider attack? Has the FBI identified any suspects or persons of interest?
9. Has the FBI examined removable media for the possibility of implanted malware?
10. Has the FBI examined the hash or verification program for tampering? \
11. What mitigations are planned for the near- and long-term?

In any state an attack on a vendor providing software and system support with such far-reaching responsibilities would be devastating. This situation is especially fragile, because of the reliance on DRE voting machines that do not provide an independent paper record of verified voter intent. KSU has instead sought to verify the validity of the software on the voting machines by running a hash program on all machines before and after elections in an effort to confirm that the software has not been altered. However, if KSU's election programming were compromised, it is also possible that the verification program could have been modified to affirm that the software is correct, even if it were not. This is a risk of using software to check the correctness of software.

Of course all Georgia elections are important. This month and next include Special Elections as well. If these upcoming elections are to be run on DREs and e-pollbooks that are maintained and programmed by KSU while the KSU Center for Election Systems is itself the subject of an ongoing criminal investigation, it can raise deep concerns. And today's cyber risk climate is not likely to improve any time soon.

We urge you to provide Georgia's citizens with information they need to confirm before going to vote that their name will appear correctly on the voter rolls, as well as back-up printed voter lists in case anomalies appear. Most importantly, we urge you to act with all haste to move Georgia to a system of voter-verified paper ballots and to conduct post-election manual audits of election results going forward to provide integrity and transparency to all of Georgia's elections. We would be strongly supportive of such efforts and would be willing to help in any way we can.

Sincerely,

Dr. Andrew W. Appel  
Eugene Higgins Professor of Computer Science,  
Princeton University

Dr. Duncan Buell  
Professor, Department of Computer Science & Engineering, NCR Chair of Computer Science & Engineering,  
University of South Carolina

Dr. Larry Diamond  
Senior Fellow, Hoover Institute and Freeman Spogli Institute,  
Stanford University



Dr. David L. Dill  
Professor of Computer Science,  
Stanford University

Dr. Richard DeMillo  
Charlotte B. and Roger C. Warren Professor of Computing  
Georgia Institute of Technology

Dr. Michael Fischer  
Professor of Computer Science,  
Yale University

Dr. J. Alex Halderman  
Professor, Computer Science and Engineering  
Director, Center for Computer Security and Society  
University of Michigan

Dr. Joseph Lorenzo Hall  
Chief Technologist,  
Center for Democracy & Technology

Martin E. Hellman  
Professor Emeritus of Electrical Engineering,  
Stanford University

Candice Hoke  
Co-Director, Center for Cybersecurity & Privacy Protection and Professor of Law,  
Cleveland State University

Harri Hursti  
Chief Technology Officer and co-founder, Zyptonite,  
founding partner, Nordic Innovation Labs

Dr. David Jefferson  
Lawrence Livermore National Laboratory

Dr. Douglas W. Jones  
Department of Computer Science  
University of Iowa

Dr. Joseph Kiniry  
Principal Investigator, Galois  
Principled CEO and Chief Scientist, Free & Fair

Dr. Justin Moore  
Software Engineer, Google

Dr. Peter G. Neumann  
Senior Principal Scientist, SRI International Computer Science Lab, and moderator of the ACM Risks Forum

Dr. Ronald L. Rivest  
MIT Institute Professor

Dr. John E. Savage  
An Wang Professor of Computer Science,  
Brown University

Bruce Schneier  
Fellow and lecturer  
Harvard Kennedy School of Government

Dr. Barbara Simons  
IBM Research (retired),  
former President Association for Computing Machinery (ACM)

Dr. Philip Stark  
Associate Dean, Division of Mathematics and Physical Sciences,  
University of California, Berkeley


Dr. Vanessa Teague  
Department of Computing & Information Systems,  
University of Melbourne

*Affiliations are for identification purposes only, they do not imply institutional endorsements.*

Exhibit 6 – Karen Handel Flyer with Absentee Ballot Application:

SPECIAL ELECTION RUN-OFF: VOTE JUNE 20, 2017

## Compare the Candidates for Congress



REPUBLICAN


### Karen Handel

PROVEN CONSERVATIVE RESULTS WE CAN TRUST


Karen Handel is a life-long conservative who built her career on sound fiscal and organizational management in both the public and private sectors. She left an abusive home when she was 17, yet finished high school and entered the workforce. With tremendous perseverance and determination, she has become one of Georgia's conservative leaders. Karen is married to Steve Handel, and they have been part of our community for decades.

- › Created jobs as President/CEO of the North Fulton Chamber of Commerce
- › Balanced the budget without raising taxes as Chairman of the Fulton County Commission
- › Took on a corrupt sheriff and implemented real ethics reform
- › Cut spending by 20% as Secretary of State
- › Will secure our borders and stop illegal immigration

**ENDORSED BY:**



**GEORGIA CHAMBER**



DEMOCRAT

### Jon Ossoff

NANCY PELOSI'S HAND-PICKED CHOICE.

Jon Ossoff is the hand-picked candidate of Nancy Pelosi and the Liberal Washington Democrats. Pelosi recruited him to run for congress so she could have an ally in Washington to raise taxes and increase spending.

- › Supported by Nancy Pelosi <sup>1</sup>
- › Raised 95% of his money from outside of Georgia — from Hollywood, New York and Massachusetts <sup>2</sup>
- › Caught lying about his already very thin resume <sup>3</sup>
- › Doesn't live in the 6th Congressional District — lives at his girlfriend's apartment in Atlanta <sup>4</sup>
- › Will support higher taxes, wasteful spending and job-killing regulations <sup>5</sup>

The Atlanta Journal-Constitution  
4/17/2017

**Ossoff ... does not live in the 6th District...**  
... He lives south of the district so that his girlfriend of 12 years, an Emory University medical student, can walk to work.

1. Politics, March 11, 2017; 2. Atlanta Journal-Constitution, April 5, 2017; 3. Washington Post, April 3, 2017; 4. CNN, April 18, 2017; 5. CNN, April 20, 2017.

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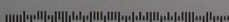
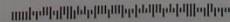
**YOUR VOTE WILL STOP NANCY PELOSI & JON OSSOFF**  
**COMPLETE YOUR VOTE BY MAIL APPLICATION TODAY!**

Place Stamp Here

Fulton County Voter Registration  
Attn: Absentee Ballot Division  
130 Peachtree St., SW,  
Suite 2186  
Atlanta, GA 30303

Place Stamp Here

Fulton County Voter Registration  
Attn: Absentee Ballot Division  
130 Peachtree St., SW,  
Suite 2186  
Atlanta, GA 30303

COUNTY or MUNICIPALITY \_\_\_\_\_

**APPLICATION FOR OFFICIAL ABSENTEE BALLOT**

DATE OF RUNOFF: 06/20/2017

APPLICATION DATE / /	DATE OF BIRTH / /	DAYTIME CONTACT NUMBER (OPTIONAL) ( ) -
-------------------------	----------------------	---

EMAIL ADDRESS (required for UOCAVA Voter requesting electronic transmission)

NAME AS REGISTERED: LAST FIRST MIDDLE

ADDRESS AS REGISTERED: STREET # CITY ZIP CODE

SIGNATURE OR MARK OF VOTER - REQUIRED

COUNTY or MUNICIPALITY \_\_\_\_\_

**APPLICATION FOR OFFICIAL ABSENTEE BALLOT**

DATE OF RUNOFF: 06/20/2017

APPLICATION DATE / /	DATE OF BIRTH / /	DAYTIME CONTACT NUMBER (OPTIONAL) ( ) -
-------------------------	----------------------	---

EMAIL ADDRESS (required for UOCAVA Voter requesting electronic transmission)

NAME AS REGISTERED: LAST FIRST MIDDLE

ADDRESS AS REGISTERED: STREET # CITY ZIP CODE


SIGNATURE OR MARK OF VOTER - REQUIRED

Absentee Ballot Application Attached

**IT'S EASY TO VOTE BY MAIL!**  
Go to [www.karenhandel.com/absentee](http://www.karenhandel.com/absentee) to request your ballot or complete and mail in the attached postcard.

**Follow These Easy Steps:**

- 1 Complete the Application.
- 2 Place a stamp on the card and drop in the nearest mailbox.
- 3 When the ballot arrives, vote Karen Handel for Congress.



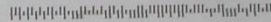
*"I have a proven record of delivering conservative results for our families. I need your vote to bring conservative change to Congress!"*

*Karen*

Paid for by the Georgia Republican Party, Inc.  
PO Box 550008  
Atlanta, GA 30355

NON-PROFIT  
US POSTAGE  
PAID  
MAIL CALL  
DIRECT


\*\*\*\*SCH 5-DIGIT 30076 FSSC  
GARLAND FAVORITO  
OR CURRENT RESIDENT  
220 TALLOW BOX DR LOT 21  
ROSWELL GA 30076-3425



770.695.7283 [info@karenhandel.com](mailto:info@karenhandel.com)  
**www.KarenHandel.com**

**SPECIAL ELECTION RUN-OFF: VOTE JUNE 20, 2017**


**Compare the Candidates for Congress**



REPUBLICAN

**Karen Handel**

PROVEN CONSERVATIVE RESULTS WE CAN TRUST



DEMOCRAT

**Jon Ossoff**

NANCY PELOSI'S HAND-PICKED CHOICE.

**YOUR VOTE IS IMPORTANT. VOTE BY MAIL APPLICATION ENCLOSED!**  
Absentee voting has started! Go to [www.karenhandel.com/absentee](http://www.karenhandel.com/absentee) to request your ballot or complete and mail in the attached postcard.

Exhibit 7 – Georgia Election Environment Support Flow from Center for Election Systems

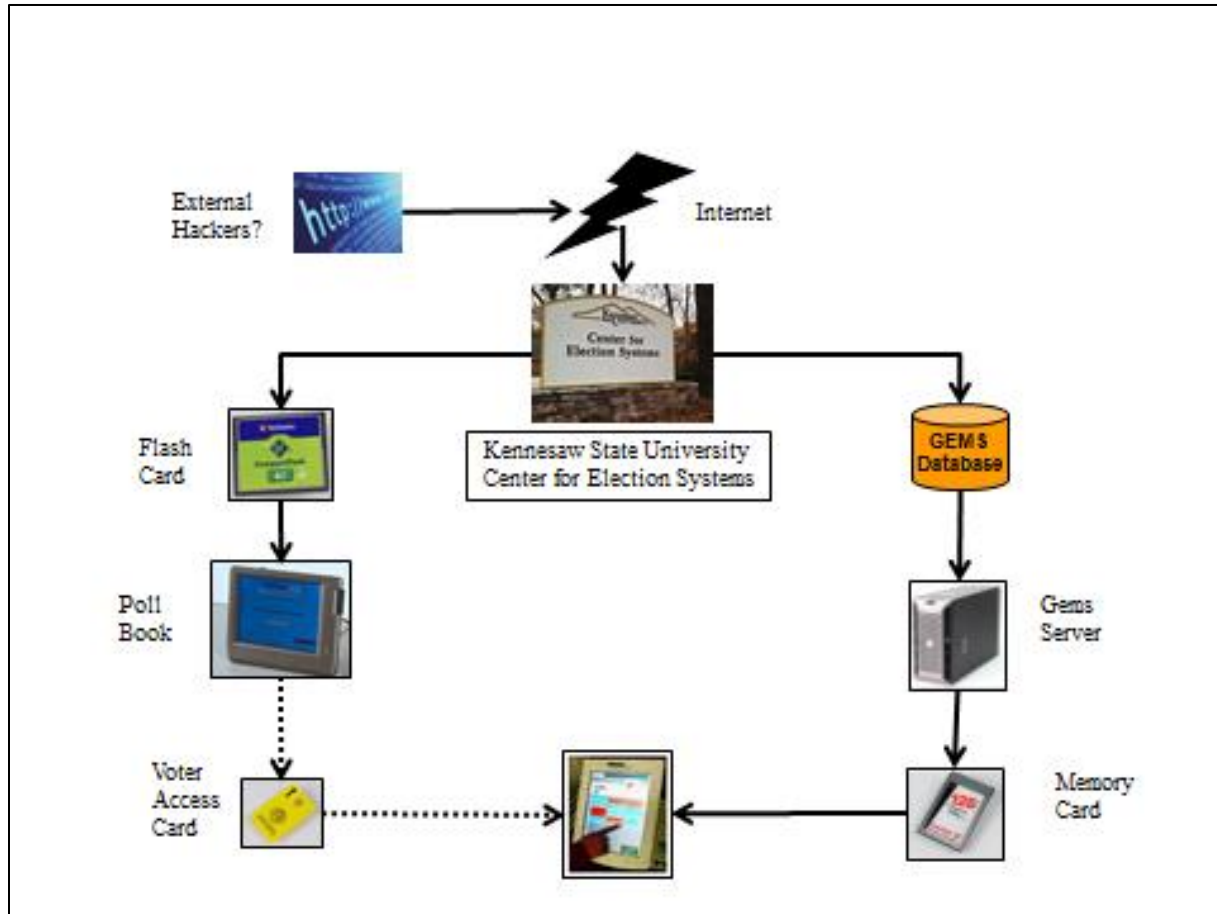
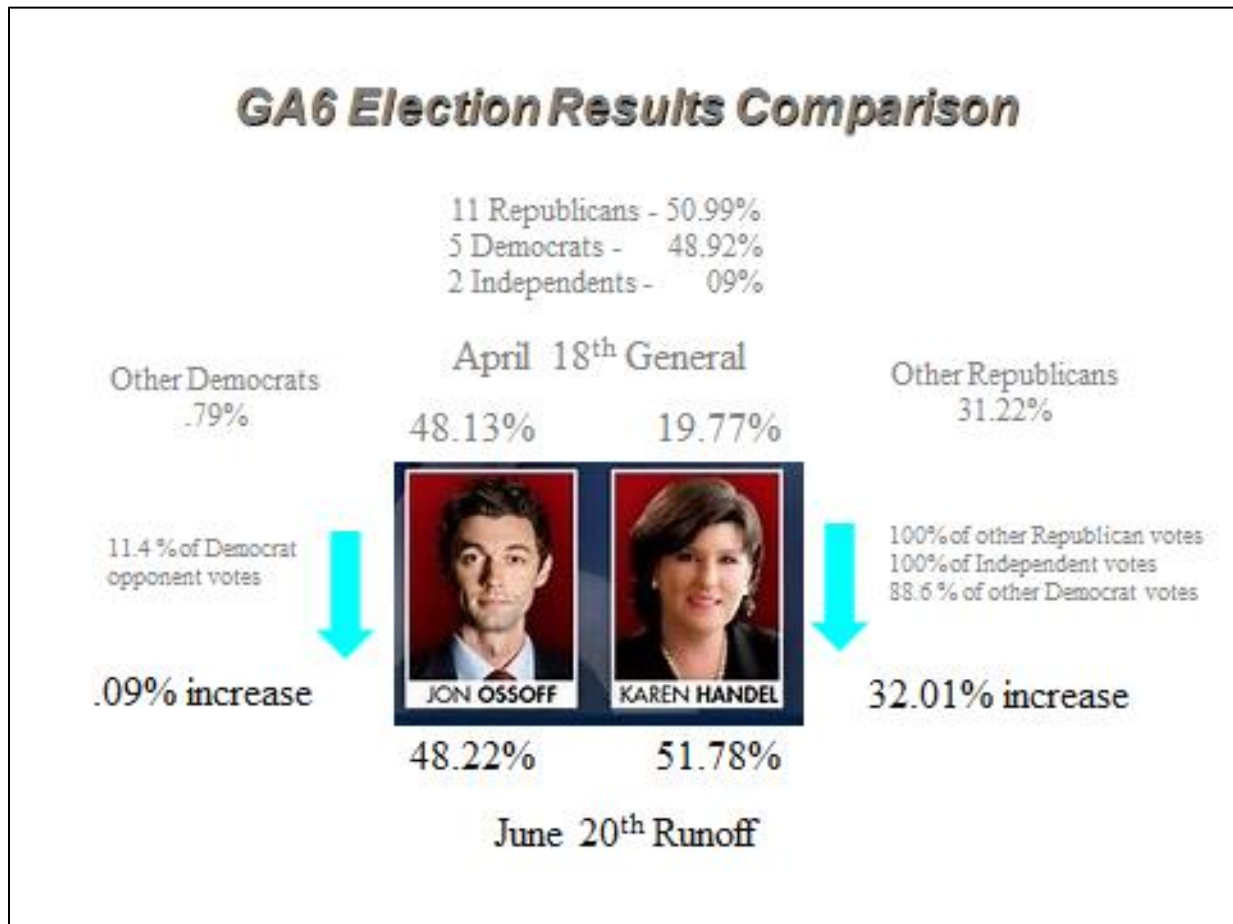




Exhibit 8 – Special and Runoff Election Results Comparison:





assessment as a research project. There I was told to contact Merle King at Kennesaw State University because all election equipment is managed by the Center for Election Systems at KSU.

3. On August 24, 2016 I intended to contact Merle King. Prior to doing so, I wanted to check the Center for Election Systems public website to see if there were any public documents that could give me background on CES and Merle King. I used the search "site:elections.kennesaw.edu inurl:pdf" at [www.google.com](http://www.google.com) and discovered what appeared to be files relating to voter registration cached by google.
4. After this discovery, I wrote a quick script to download what public files were available here: <https://elections.kennesaw.edu/sites/>, at the time a publicly accessible site. After running the script to completion I had acquired multiple gigabytes of data. This data was comprised of many different files and formats, but among them were:
  - voter registration databases filled with personally identifiable information of voters (filename *PollData.db3*)
  - Election Management System GEMs databases (.gbf and .mdb extensions)
  - PDFs of election day supervisor passwords, for example:
    - *July 2016 Primary and NP Election Runoff Password Memo.pdf*
  - Windows executables and DLLs, for example:
    - *System.Data.SQLite.DLL*
    - *ExpDbCreate.exe*
    - *ExpReport.exe*
5. Besides leaking information, the server at [elections.kennesaw.edu](http://elections.kennesaw.edu) was running a version of Drupal vulnerable to an exploit called *drupageddon*. Using *drupageddon*, an attacker can fully compromise a vulnerable server with ease. A



public advisory for drupageddon was release in 2014, alerting users that attackers would be able to execute, create, modify, and delete anything on the server.

On August 28, 2016 I sent an email to Merle King notifying him of the vulnerabilities I found.

Hello Merle,

My name is Logan Lamb, and I'm a cybersecurity researcher who is a member of Bastille Threat Research Team. We work to secure devices against new and existing wireless threats: <https://www.bastille.net/>. This past Tuesday I went to Fulton County Government Center to speak with Rick Barron about securing voting machines against wireless threats. I was then directed to contact you and the center. I'd like to collaborate with you on securing our state's election systems infrastructure against wireless attacks.

While attempting to get more background information on the center prior to contacting you, I discovered serious vulnerabilities affecting [elections.kennesaw.edu](http://elections.kennesaw.edu).

The following google searches reveal documents that shouldn't be indexed and appear to be critical to the elections process. In addition, the Drupal install needs to be immediately upgraded from the current version, 7.31:

"site:elections.kennesaw.edu inurl:pdf"

I generally use this type of search to find documents on websites that lack search functionality. This search revealed a completely open Drupal install. Assume any document that requires authorization has already been downloaded without authorization.

"site:elections.kennesaw.edu L&A"

The second search result appears to be for disseminating critical voting system software. This is especially concerning because, as the following article states, there's a strong probability that your site is already compromised.  
<https://www.drupal.org/project/drupalgeddon>  
<https://www.drupal.org/SA-CORE-2014-005>

If you have any questions or concerns please contact me. I'm able to come to the center this Monday for a more thorough discussion.

Take care,  
Logan

6. After having a brief conversation with Mr. King on August 29, 2016 and being assured that the issues would be remediated, I dropped the issue.

7. In late February, 2017 I told my colleague Chris Grayson about what transpired in August. He quickly confirmed the leaking of information had not been appropriately remediated. I tweaked my script and checked to see if it worked as it had in August.
8. The script was able to download the publicly available information. The data downloaded included the same data from the previous collection and new information relating to recent elections including:
  - More recent GEMs database files
  - Files relating to the presidential election, e.g.
    - *November 2016 General Election Day Password Memo.pdf*
    - *November 2016 General Voter Lookup Password Memo.pdf*
  - Very recent files, e.g. *064 (1-10-2017).pdf*
9. Given the severity and ease with which an attacker can use drupageddon, an attacker would have easily been able to gain full control of the server at elections.kennesaw.edu had they so wanted.
10. Having gained control of the server, an attacker could modify files that are downloaded by the end users of the website, potentially spreading malware to everyone who downloaded files from the website.
11. In addition to the previously mentioned files on the server, there were multiple training videos. One of these training videos instructed users to first download files from the elections.kennesaw.edu website, put those files on a memory card, and insert that card into their local county voting systems.
12. Further Affiant sayeth not.

  
Logan Lamb

## Exhibit 10 – Statistical Summary

Official GA6 Runoff Results for June 20, 2017																								
Voting Method	Cobb				DeKalb				Fulton				State				Total							
	Handel	%	Ossoff	%	Handel	%	Ossoff	%	Handel	%	Ossoff	%	Handel	%	Ossoff	%	Votes	Type%						
Mail-In	4366	39.72%	6625	60.28%	1980	26.51%	5489	73.49%	3735	38.56%	5951	61.44%	10081	35.82%	18065	64.18%	28,146	10.81%						
Absentee In Person	3666	49.60%	3725	50.40%					17755	50.37%	17493	49.63%												
Absentee In Person 2	5700	58.55%	4036	41.45%					19385	52.39%	17618	47.61%												
Total Advance in Person	9366	54.69%	7761	45.31%	10113	39.83%	15280	60.17%	37140	51.40%	35111	48.60%	56619	49.33%	58152	50.67%	114,771	44.09%						
Election Day	31893	63.35%	18451	36.65%	11983	47.79%	13093	52.21%	24062	58.14%	17321	41.86%	67938	58.16%	48865	41.84%	116,803	44.87%		Special Election				
Provisional	63	18.53%	277	81.47%	41	38.32%	66	61.68%	57	38.26%	92	61.74%	161	27.01%	435	72.99%	596	0.23%	Runoff Gain	67747				
Total Votes	45688	57.98%	33114	42.02%	24117	41.55%	33928	58.45%	64994	52.64%	58475	47.36%	134799	51.78%	125517	48.22%	260,316	100%	New Split	33873				
Blank Voted Ballots																	139		Tot Runoff	134799				
Ballots Cast																	260,455		Handel	38071				
Mail-In + Prov	4429	39.09%	6902	60.91%	2021	26.68%	5555	73.32%	3792	38.56%	6043	61.44%	10242	35.63%	18500	64.37%	28,742	11.04%	Opponents	60121				
Early & Election Day	41259	61.15%	26212	38.85%	22096	43.78%	28373	56.22%	61202	53.86%	52432	46.14%	124557	53.79%	107017	46.21%	231,574	88.96%	Run-Split	62855				
Mail-In + Early	13732	48.84%	14386	51.16%	12093	36.80%	20769	63.20%	40875	49.89%	41062	50.11%	66700	46.67%	76217	53.33%	142,917	54.90%	Percent	104.55				
Ossoff Runoff Results vs. Special Election against 17 Opponents																								
Voting Method	Cobb				DeKalb				Fulton				State											
	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%				
Mail-In	1719	68.71%	6625	60.28%	285.40%	1850	81.53%	5489	73.49%	196.70%	1477	81.51%	5951	61.44%	302.91%	5046	76.65%	18065	64.18%	258.01%				
Total Advance in Person	6655	57.04%	7761	45.31%	16.62%	6761	71.30%	15280	60.17%	126.00%	17737	60.93%	35111	48.60%	97.95%	31153	61.98%	58152	50.67%	86.67%				
Election Day	16848	35.88%	18451	36.65%	9.51%	17300	53.27%	13093	52.21%	-24.32%	22086	39.53%	17321	41.86%	-21.57%	56234	41.56%	48865	41.84%	-13.10%				
Provisional	66	61.11%	277	81.47%	319.70%	41	57.75%	66	61.68%	60.98%	133	54.73%	92	61.74%	-30.83%	240	56.87%	435	72.99%	81.25%				
Total Votes	25288	41.30%	33114	42.02%	30.95%	25952	58.58%	33928	58.45%	70.73%	41433	47.60%	58475	47.36%	41.13%	92673	48.12%	125517	48.22%	35.44%				
Handel Runoff Results vs. Special Election against 17 Opponents																								
Voting Method	Cobb				DeKalb				Fulton				State											
	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%				
Mail-In	170	6.79%	4366	39.72%	2468.24%	156	6.88%	1980	26.51%	1169.23%	129	7.12%	3735	38.56%	2795.35%	455	6.91%	10081	35.82%	2115.60%				
Total Advance in Person	1391	11.92%	9366	54.69%	573.33%	1023	10.79%	10113	39.83%	888.56%	4693	16.12%	37140	51.40%	691.39%	7107	14.14%	56619	49.33%	696.67%				
Election Day	9732	20.73%	31893	63.35%	227.71%	6168	18.99%	11983	47.79%	94.28%	14539	26.02%	24062	58.14%	65.50%	30439	22.50%	67938	58.16%	123.19%				
Provisional	13	12.04%	63	18.53%	384.62%	12	16.90%	41	38.32%	241.67%	45	18.52%	57	38.26%	26.67%	70	16.59%	161	27.01%	130.00%				
Total Votes	11306	18.47%	45688	57.98%	304.10%	7359	16.61%	24117	41.55%	227.72%	19406	22.30%	64994	52.64%	234.92%	38071	19.77%	134799	51.78%	254.07%				
Handel Runoff Results vs. Special Election Republicans																								
Voting Method	Cobb				DeKalb				Fulton				State											
	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%	18-Apr	% Vote	20-Jun	% Vote	Gain%				
Mail-In	754	30.14%	4366	39.72%	479.05%	392	17.28%	1980	26.51%	405.10%	301	16.61%	3735	38.56%	1140.86%	1447	21.98%	10081	35.82%	596.68%				
Total Advance in Person	4906	42.05%	9366	54.69%	90.91%	2626	27.69%	10113	39.83%	285.11%	11052	37.96%	37140	51.40%	236.05%	18584	36.97%	56619	49.33%	204.67%				
Election Day	29822	63.52%	31893	63.35%	6.94%	14821	45.64%	11983	47.79%	-19.15%	33339	59.67%	24062	58.14%	-27.83%	77982	57.64%	67938	58.16%	-12.88%				
Provisional	42	38.89%	63	18.53%	50.00%	28	39.44%	41	38.32%	46.43%	109	44.86%	57	38.26%	-47.71%	179	42.42%	161	27.01%	-10.06%				
Total Votes	35524	58.02%	45688	57.98%	28.61%	17867	40.33%	24117	41.55%	34.98%	44801	51.47%	64994	52.64%	45.07%	98192	50.99%	134799	51.78%	37.28%				
Voter Turnout Gain% from Special Election to Runoff																								
Voting Method	Cobb				DeKalb				Fulton				State											
	18-Apr	% Type	20-Jun	% Type	Gain%	18-Apr	% Type	20-Jun	% Type	Gain%	18-Apr	% Type	20-Jun	% Type	Gain%	18-Apr	% Type	20-Jun	% Type	Gain%				
Mail-In	2502	4.09%	10991	13.95%	339.29%	2269	3.71%	7469	12.87%	229.18%	1812	2.96%	9686	7.84%	434.55%	6583	3.42%	28146	10.81%	327.56%				
Total Advance in Person	11667	19.05%	17127	21.73%	46.80%	9483	21.41%	25393	43.75%	167.77%	29112	33.45%	72251	58.52%	148.18%	50262	26.10%	114771	44.09%	128.35%				
Election Day	46952	76.68%	50344	63.89%	7.22%	32476	73.31%	25076	43.20%	-22.79%	55874	64.19%	41383	33.52%	-25.94%	135302	70.26%	116803	44.87%	-13.67%				
Provisional	108	0.18%	340	0.43%	214.81%	71	0.16%	107	0.18%	50.70%	243	0.28%	149	0.12%	-38.68%	422	0.22%	596	0.23%	41.23%				
Total Votes	61229	31.80%	78802	100.00%	28.70%	44299	23.00%	58045	100.00%	31.03%	87041	45.20%	123469	100.00%	41.85%	192569	100.00%	260316	100.00%	35.18%				
Special Election Voting by Party																								
Party Affiliation	Cobb				DeKalb				Fulton				State											
	Other	Other %	Total	Total %	Other	Other %	Total	Total %	Other	Other %	Total	Total %	Other	Other %	Total	Total %	Other	Other %	Total	Total %				
Republicans	24218	39.55%	35524	58.02%	10508	23.72%	17867	40.33%	25395	29.18%	44801	51.47%	60121	31.22%	98192	50.99%	25395	29.18%	10081	35.82%				
Democrats	361	0.59%	25649	41.89%	425	0.96%	26377	59.54%	742	0.85%	42175	48.45%	1528	0.79%	94201	48.92%	1528	0.79%	94201	48.92%				
Independents	56	0.09%	56	0.09%	55	0.12%	55	0.12%	65	0.07%	65	0.07%	176	0.09%	176	0.09%	176	0.09%	176	0.09%				
Mail-in Gain by Party from Special Election to Runoff																								
Party Affiliation	Cobb				DeKalb				Fulton				State											
	18-Apr	%	20-Jun	%	Gain%	18-Apr	%	20-Jun	%	Gain%	18-Apr	%	20-Jun	%	Gain%	18-Apr	%	20-Jun	%	Gain%				
Republicans	754	30.14%	4366	39.72%	479.05%	392	17.28%	1980	26.51%	405.10%	301	16.61%	3735	38.56%	1140.86%	1447	21.98%	10081	35.82%	596.68%				
Democrats	1747	69.82%	6625	60.28%	279.22%	1875	82.64%	5489	73.49%	192.75%	1509	83.28%	5951	61.44%	294.37%	5131	77.94%	18065	64.18%	252.08%				
Independents	1	0.04%				2	0.09%				2	0.11%				5	0.08%							



Runoff Mail-In Party Line Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Mail-In	Mail%	New%	Affiliate	Affili%	Mail-In	Mail%	New%	Affiliate	Affili%	Mail-In	Mail%	New%	Affiliate	Affili%	Mail-In	Mail%	New%
Republicans	2359	70.67%	4366	39.72%	26.23%	1068	46.37%	1980	26.51%	17.65%	1575	61.36%	3735	38.56%	30.34%	5002	60.94%	10081	35.82%	25.47%
Democrats	979	29.33%	6625	60.28%	73.77%	1235	53.63%	5489	73.49%	82.35%	992	38.64%	5951	61.44%	69.66%	3206	39.06%	18065	64.18%	74.53%
Independents	94	2.18%				89	2.52%				39	1.10%				222	1.94%			
Non-Affiliated	7559					5077					7080					19716				
Total Votes-Classified %	10991	31.23%	10991			7469	32.03%	7469			9686	26.90%	9686			28146	29.95%	28146		0.00%

Runoff Early Vote Party Line Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Early	Early%	New%	Affiliate	Affili%	Early	Early%	New%	Affiliate	Affili%	Early	Early%	New%	Affiliate	Affili%	Early	Early%	New%
Republicans	5653	81.03%	9366	54.69%	36.58%	5403	57.61%	10113	39.83%	29.41%	15460	73.71%	37140	51.40%	42.28%	26516	71.03%	56619	49.33%	38.87%
Democrats	1323	18.97%	7761	45.31%	63.42%	3976	42.39%	15280	60.17%	70.59%	5515	26.29%	35111	48.60%	57.72%	10814	28.97%	58152	50.67%	61.13%
Independents	135	1.63%				509	3.81%				383	1.45%				1027	2.13%			
Non-Affiliated	10016					15505					50893					76414				
Total Votes-Classified %	17127	41.52%	17127			25393	38.94%	25393			72251	29.56%	72251			114771	33.42%	114771		0.00%

Runoff Election Day Party Line Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Mail-In	Mail%	New%	Affiliate	Affili%	Mail-In	Mail%	New%	Affiliate	Affili%	Elect Day	ED%	New%	Affiliate	Affili%	Elect Day	ED%	New%
Republicans	13387	87.82%	31893	63.35%	52.72%	4493	70.12%	11983	47.79%	40.12%	6857	83.78%	24062	58.14%	51.83%	24737	82.91%	67938	58.16%	49.68%
Democrats	1856	12.18%	18451	36.65%	47.28%	1915	29.88%	13093	52.21%	59.88%	1328	16.22%	17321	41.86%	48.17%	5099	17.09%	48865	41.84%	50.32%
Independents	229	1.34%				302	3.63%				110	1.16%				641	1.83%			
Non-Affiliated	34872					18366					33088					86326				
Total Votes-Classified %	50344	30.73%	50344			25076	26.76%	25076			41383	20.04%	41383			116803	26.09%	116803		0.00%

Runoff Total Vote Party Line Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Early	Early%	New%	Affiliate	Affili%	Early	Early%	New%	Affiliate	Affili%	Total	Total%	New%	Affiliate	Affili%	Total	Total%	New%
Republicans	21399	83.73%	45688	57.98%	45.62%	10964	60.61%	24117	41.55%	32.92%	23892	75.30%	64994	52.64%	44.80%	56255	74.63%	134799	51.78%	42.47%
Democrats	4158	16.27%	33114	42.02%	54.28%	7126	39.39%	33928	58.45%	67.08%	7835	24.70%	58475	47.96%	55.20%	19119	25.37%	125517	48.22%	57.53%
Independents	458	1.54%				900	3.57%				532	1.34%				1890	2.00%			
Non-Affiliated	52447					38948					91061					182456				
Excluded Provisionals	340					107					149					596				
Total Votes-Classified %	78802	33.01%	78802			58045	32.72%	58045			123469	26.13%	123469			260316	29.68%	260316		0.00%

Runoff Mail-In Shared Party Ratio Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Mail-In	Mail%	Cross%	Affiliate	Affili%	Mail-In	Mail%	Cross%	Affiliate	Affili%	Mail-In	Mail%	Cross%	Affiliate	Affili%	Mail-In	Mail%	Cross%
Republicans	2359	70.67%	4366	39.72%	-30.95%	1068	46.37%	1980	26.51%	-19.86%	1575	61.36%	3735	38.56%	-22.79%	5002	60.94%	10081	35.82%	-25.12%
Democrats	979	29.33%	6625	60.28%	30.95%	1235	53.63%	5489	73.49%	19.86%	992	38.64%	5951	61.44%	22.79%	3206	39.06%	18065	64.18%	25.12%
Independents	94	2.18%				89	2.52%				39	1.10%				222	1.94%			
Non-Affiliated	7559					5077					7080					19716				
Total Votes-Classified %	10991	31.23%	10991			7469	32.03%	7469			9686	26.90%	9686			28146	29.95%	28146		0.00%

Runoff Early Vote Shared Party Ratio Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Early	Early%	Cross%	Affiliate	Affili%	Early	Early%	Cross%	Affiliate	Affili%	Early	Early%	Cross%	Affiliate	Affili%	Early	Early%	Cross%
Republicans	5653	81.03%	9366	54.69%	-26.35%	5403	57.61%	10113	39.83%	-17.78%	15460	73.71%	37140	51.40%	-22.30%	26516	71.03%	56619	49.33%	-21.70%
Democrats	1323	18.97%	7761	45.31%	26.35%	3976	42.39%	15280	60.17%	17.78%	5515	26.29%	35111	48.60%	22.30%	10814	28.97%	58152	50.67%	21.70%
Independents	135	1.63%				509	3.81%				383	1.45%				1027	2.13%			
Non-Affiliated	10016					15505					50893					76414				
Total Votes-Classified %	17127	41.52%	17127			25393	38.94%	25393			72251	29.56%	72251			114771	33.42%	114771		0.00%

Runoff Election Day Shared Party Ratio Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	ElectDay	ED%	Cross%	Affiliate	Affili%	ElectDay	ED%	Cross%	Affiliate	Affili%	ElectDay	ED%	Cross%	Affiliate	Affili%	ElectDay	ED%	Cross%
Republicans	13387	87.82%	31893	48.84%	-38.99%	4493	70.12%	11983	36.80%	-33.32%	6857	83.78%	24062	49.89%	-33.89%	24737	82.91%	67938	58.16%	-24.75%
Democrats	1856	12.18%	18451	51.16%	38.99%	1915	29.88%	13093	63.20%	33.32%	1328	16.22%	17321	50.11%	33.89%	5099	17.09%	48865	41.84%	24.75%
Independents	229	1.34%				302	3.63%				110	1.16%				641	1.83%			
Non-Affiliated	34872					18366					33088					86326				
Total Votes-Classified %	50344	30.73%	50344			25076	26.76%	25076			41383	20.04%	41383			116803	26.09%	116803		0.00%

Runoff Total Shared Party Ratio Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Affili%	Total	Total%	Cross%	Affiliate	Affili%	Total	Total%	Cross%	Affiliate	Affili%	Total	Total%	Cross%	Affiliate	Affili%	Total	Total%	Cross%
Republicans	21399	83.73%	45625	48.84%	-34.89%	10964	60.61%	24076	36.80%	-23.81%	23892	75.30%	64937	49.89%	-25.42%	56255	74.63%	134638	51.78%	-22.85%
Democrats	4158	16.27%	32837	51.16%	34.89%	7126	39.39%	33862	63.20%	23.81%	7835	24.70%	58383	50.11%	25.42%	19119	25.37%	125082	48.22%	22.85%
Independents	458	1.54%				900	3.57%				532	1.34%				1890	2.00%			
Non-Affiliated	52447					38948					91061					182456				
Excluded Provisionals	340		340			107		107			149		149			596				
Total Votes-Classified %	78802	33.01%	78802			58045	32.72%	58045			123469	26.13%	123469			260316	29.68%	260316		0.00%

Runoff Mail-In Split Unaffiliated Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%
Republicans	2359	540	4366	1820	54.51%	1068	-603	1980	1671	72.56%	1575	176	3735	1400	54.52%	5002	112	10081	4890	59.58%
Democrats	979	2799	6625	-1820	-54.51%	1235	2906	5489	-1671	-72.56%	992	2392	5951	-1400	-54.52%	3206	8096	18065	-4890	-59.58%
Independents / Split	94	47				89	45				39	20				222	111			
Non-Affiliated / Split	7559	3780				5077	2539				7080	3540				19716	9858			
Total Votes-Classified %	10991	31.23%	10991			7469	2303	7469			9686	2567	9686			28146	8208	28146		

Runoff Early Vote Split Unaffiliated Vote Projection																				
Party Affiliation	Cobb					DeKalb					Fulton					State				
	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%	Affiliate	Needed	Mail-In	Excess	Cross%
Republicans	5653	4291	9366	1363	19.53%	5403	2106	10113	3297	35.15%	15460	11502	37140	3958	18.87%	26516	17899	56619	8618	23.08%
Democrats	1323	2686	7761	-1363	-19.53%	3976	7273	15280	-3297	-35.15%	5515	9473	35111	-3958	-18.87%	10814	19432	58152	-8618	-23.08%
Independents / Split	135	68				509	255				383	192				1027	514			
Non-Affiliated / Split	10016	5008				15505	7753				50893	25447				76414	38207			
Total Votes-Classified %	17127																			

### Exhibit 11 – [GA6 Runoff Polls](#)

Polling Data						
Poll	Date	Sample	MoE	Handel (R)	Ossoff (D)	Spread
WSB-TV/Landmark	6/18 - 6/18	500 LV	4.4	49	49	Tie
Trafalgar Group (R)	6/17 - 6/18	1100 LV	2.9	51	49	Handel +2
WSB-TV/Landmark	6/15 - 6/15	800 LV	3.5	48	50	Ossoff +2
FOX 5 Atlanta/Opinion Savvy	6/14 - 6/15	537 LV	4.2	49	50	Ossoff +1
Trafalgar Group (R)	6/10 - 6/13	1100 LV	2.9	47	50	Ossoff +3
WXIA-TV/SurveyUSA	6/7 - 6/11	503 LV	4.5	47	47	Tie
WSB-TV/Landmark	6/6 - 6/7	420 LV	4.8	47	50	Ossoff +3
Atlanta Journal-Constitution	6/5 - 6/8	745 LV	4.0	44	51	Ossoff +7
WSB-TV/Landmark	5/30 - 5/31	500 LV	4.4	48	49	Ossoff +1
WXIA-TV/SurveyUSA	5/16 - 5/20	549 LV	4.3	44	51	Ossoff +7
Gravis	5/8 - 5/10	870 LV	3.3	45	47	Ossoff +2
Landmark Communications	5/3 - 5/4	611 LV	4.0	49	47	Handel +2

### APPENDIX

#### Academic Studies on AccuVote TS and TSX Machines

Virtually all academic and state commissioned studies concerning the security and accuracy of the AccuVote TS, Accuvote TSx and GEMS server equipment that Georgia uses have produced highly negative findings. Examples include:

- In 2003, a Johns Hopkins [Analysis of an Electronic Voting System report](#) found "significant security flaws" in the AccuVote-TS machines
- In 2003, a [Compuware DRE Technical Assessment](#) commissioned by the state of Ohio recommended discontinuing the use of Diebold Accuvote machines
- In 2003, a [RABA Technologies Trusted Agent Report](#) commissioned by the state of Maryland found that Accuvote TS flaws could seriously disrupt an election
- In 2003, a [SAIC Risk Assessment](#) commissioned by the state of Maryland found 26 critical security flaws out of 326 total for Accuvote TS voting machines and GEMS servers
- In 2003, a California [Secretary of State Staff Report](#) found that Diebold had still been unable to certify its software resulting in decertification by the Secretary of State
- In 2003, a Nevada Electronic Systems Division [Diebold and Sequoia Voting System Security](#) memorandum reported to the Secretary of State that there was a "...a real threat to any elections using the Diebold machines"
- In 2004, a Free Congress Foundation [Voting System Concerns](#) study and [Election Day Preparedness Scorecard](#) conducted in conjunction with Verified Voting rated Georgia last in country in system reliability and recount preparedness Georgia graded as F- on national average of C+
- In 2006, a University of California [Security Analysis of the Diebold AccuBasic Interpreter](#) Identified security vulnerabilities in Accuvote TS machines
- In 2006, a [Princeton Security Analysis of the Accuvote-TS Voting Machine](#) found it is doubtful that DRE vendors will be able to overcome the inherent security problems and they recommended a voter verified paper ballot audit trail. They also demonstrated how an Accuvote TS machine could be hacked and produce fraudulent results
- In 2008, a Georgia Tech [Security of the Processes and Procedures Surrounding Electronic Voting in Georgia](#) recommended audit trails for all Georgia machines

### History of Georgia Vote Counting Discrepancies

1. In 2005, a Cobb County Special Purpose Local Option Sales Tax (SPLOST) referendum appeared to be headed for defeat. However, election problems halted the counting. When the errors had been addressed, the SPLOST was declared to have passed by 114 votes even though there were 285 blank cast ballots and the SPLOST referendum was the only contest on the ballot
2. In 2011, another Cobb County SPLOST was similarly declared passed by 79 votes with 95 blank voted ballots. There were 9 percentage points difference in verifiable mail-in votes vs. unverifiable electronic early votes and Election Day votes. The SPLOST passed even though it failed to capture a majority of verifiable votes
3. In 2002, Cobb County added 3,256 test votes into their live election results. Election officials published the results before finding the error and correcting it
4. In 2004, two Bibb County machines in separate precincts lost over 200 votes when they could not accumulate them (Rutland 2 - 79, Howard 7 -123)
5. In 2008, Lowndes County included 947 test votes in their live election results. The Elections Director and assistant who loaded the cards and certified the results tried to blame a voting machine technician who was not present for loading or certification
6. In 2008, the results of 25,000 Douglas Co. Election Day ballots were placed into a spreadsheet, reviewed by an Election Board member at his home and then re-entered the next day into the country servers. The outcome of several races changed. An investigation was conducted but the board member and Elections Director were never charged for this specific infraction
7. In 2008, the State of Georgia failed to count over 100 write-in votes for Constitution Party Presidential candidate Chuck Baldwin, including 75 that were recorded by Cherokee County election officials alone. The state never explained how this occurred or verified the write in results with other counties despite formal inquiries by party officials. This evidence was used in a recent ballot access [lawsuit](#), where the U.S. District Court and 11<sup>th</sup> Circuit Court of Appeals ruled against the state. The U.S. District court struck down Georgia's restrictive Presidential ballot access law as being unconstitutional
8. In 2006, Fulton County failed to count over 230 votes for Constitution Party Candidate Woody Holmes. Woody ran for State Representative of District 65, as a write-in candidate. Although Fulton County reported only two write-in votes for Mr. Holmes, the elections office later located 238 more votes after Constitution party officials visited Fulton County's office to find out why his vote totals were wrong



### Chronology of GA6 Key Events

This chronology is established based on the VoterGA [Root Cause Analysis](#) for the GA6 Special Election and this statistical analysis for the GA6 Special Election Runoff.

- Before 2017 – Roswell City Council elections set for March 21<sup>st</sup> and Runoff for April 18
- Feb 9 – U.S. Senate confirms GA6 Congressman Tom Price as Health & Human Services Secretary
- Feb 10 – Ga SOS legal counsels advise Gov. Deal that April 18 is the first viable date for Special Election without considering MOVE regulations impact to combine ballot w/ a potential Roswell Runoff
- Feb 11 – Gov. Deal proclaims April 18 as GA6 Special Election date to replace Tom Price
- Feb 27 – Johns Creek City Council calls for Special Election on April 18 w/ qualifying ending on March 8 a deadline too late to meet MOVE regulations for overseas ballot distribution
- Mar 4 – Deadline to distribute April 18 election ballots for overseas for April 18 election
- Mar 8 – Johns Creek qualifying ends identifying candidates too late for overseas ballots
- Mar 21 Roswell City Council elections require April 18 Runoff
- Mar 27 – Special Election early voting begins as Fulton must conduct 3 concurrent redundant elections for the first time in Georgia election history
- Apr 14 – Special Election early voting ends
- Apr 18 – GA6 Special Election is held with reporting delays and election results shifts occurring
- Apr 20 - Fulton Election Director explains to Commissioners that Roswell Runoff card was accidentally loaded into 6th District results
- Apr 20 – Sec. Kemp announces investigation to open for why error in basic procedure occurred
- May 2 - VoterGA releases Root Cause Analysis showing security flaws caused Apr 18 problems
- May 2 – SOS office logs investigation into April 18 procedural errors
- May 25 – Emergency lawsuit is filed by Georgia plaintiffs and Rocky Mountain Foundation in Fulton Superior Court to use paper ballots in GA6 election
- May 26 – Court invokes 5 day notice rule needed to defend lawsuit as requested by GA AG
- May 30 - Runoff early voting begins
- Jun 8 - Hearing on paper ballot lawsuit is held
- Jun 9 - Court denies paper ballot lawsuit citing sovereign immunity and risk to early voters
- Jun 16 - Runoff early voting ends
- June 20 – Runoff election held
- Jun 24 – Fulton Election Board certifies results while ignoring petition to recanvass
- Jun 26 – Cobb and DeKalb Election Board certifies results while ignoring petitions to recanvass
- Jun 26 – SOS certifies results and Karen Handel is sworn in as new U.S. 6<sup>th</sup> District congresswomen
- Jul 3 – Georgia plaintiffs and Coalition for Good Governance submit lawsuit in Fulton Superior Court to challenge election results and permanently ban Georgia’s voting machines
- Aug 8 - Defendants remove case to U.S. federal court