Distribution Agreement

In presenting this thesis as a partial fulfillment of the requirements for a degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis in whole or in part in all forms of media, now or hereafter now, including display on the World Wide Web. I understand that I may select some access restrictions as part of the online submission of this thesis. I retain all ownership rights to the copyright of the thesis. I also retain the right to use in future works (such as articles or books) all or part of this thesis.

Grace Paschal Gerenday April 12, 2022

Post-Election Audits and Voter Confidence in Election Results

by

Grace Paschal Gerenday

Dr. Bernard Fraga
Adviser

Political Science Department

Dr. Bernard Fraga

Adviser

Dr. Alexander Bolton

Committee Member

Dr. Pablo Montagnes

Committee Member

2022

Post-Election Audits and Voter Confidence in Election Results

By

Grace Paschal Gerenday

Dr. Bernard Fraga

Adviser

An abstract of
a thesis submitted to the Faculty of Emory College of Arts and Sciences
of Emory University in partial fulfillment
of the requirements of the degree of
Bachelor of Arts with Honors

Political Science Department

2022

Abstract

Post-Election Audits and Voter Confidence in Election Results
By Grace Paschal Gerenday

In this study, I ask the question: can post-election audits increase voter confidence in election results? Following the controversy of the 2020 presidential election, especially the Republican-led claims of fraud, there is a concerning trend of decreasing voter confidence in election results. A solution is needed, but few solutions are supported by both political parties. I present post-election audits as a potentially bipartisan, effective solution to improve voter confidence in election results. Through a theory of signals of integrity, I argue that voters feel more confident when they are aware of procedures that are in place to ensure that votes are counted correctly. In this study, post-election audits are considered one such signal of integrity. Through analysis of the Survey of the Performance of American Elections data and data collected from an original survey experiment in the Cooperative Election Study, I uncover existing trends of voter confidence, and study the effects of post-election audits. I find that voters that live in politically competitive states, are Republicans, or saw their preferred candidate lose the last election are on average less confident than voters that live in uncompetitive states, are Democrats, or saw their preferred candidate win. In studying how audits might affect confidence, I find that audit requirements are not a good predictor of confidence, and that audits, particularly partisan audits, have the potential to decrease voter confidence, particularly among Democrats and those who saw their candidate win in the last election. I conclude that the partisan messaging and well-publicized partisan audit in Arizona contributed to a negative response to post-election audits, and that some voters now view them as a way for the losing party in an election to overturn election results, rather than a tool to verify the results of an election.

Post-Election Audits and Voter Confidence in Election Results

By

Grace Paschal Gerenday

Dr. Bernard Fraga

Adviser

A thesis submitted to the Faculty of Emory College of Arts and Sciences
of Emory University in partial fulfillment
of the requirements of the degree of
Bachelor of Arts with Honors

Political Science Department

2022

Acknowledgements

I would like to thank my advisor, Dr. Bernard Fraga, for his support throughout this process. He has challenged me to think more deeply about every aspect of this project, and his expertise and encouragement has allowed me to produce a thesis that I am very proud of.

I would also like to express my gratitude for the support of my committee members, Dr. Pablo Montagnes and Dr. Alexander Bolton. Their support throughout my undergraduate years has been incredibly meaningful, and I am grateful for their involvement in this thesis process.

I would also like to give special thanks to Mom, Dad, and Keith, for their unconditional love and support. To Mom especially, thank you for showing me what it means to be a confident, intelligent, motivated woman.

Thank you also to my other supporters throughout this process, including Andrew, for his encouragement, patience, and many late-night thesis discussions, and Kendall, for her affirmations that got me to the finish line.

Thank you to my grandmother, who has ensured that I have the opportunity to receive such an incredible education here at Emory.

Thank you finally to God, who has blessed me immeasurably.

Table of Contents

Illustrations

List of Figures

List of Tables

Introduction

The 2020 presidential elections were rife with drama, rumors, and conflicting narratives. Leading up to the election, concerns about the coronavirus increased calls for mail-in ballots, leaving elections officials scrambling to increase their capacity to send out and process these ballots. At the same time, the abrupt shift in states that normally do not offer widespread mail-in voting led some to question the legality and integrity of voting by mail. Then President Trump repeatedly spoke against mail-in voting, alleging that it would increase opportunities for election fraud (Farley, 2020).

After months of casting doubt on mail-in voting and threatening to refuse to concede the election, it was unsurprising that Trump immediately questioned the validity of election results as they were counted in the days following the November 3rd election. Trump's early lead from in-person votes shrank as mail ballots were counted, and he and his followers began to argue that widespread fraud perpetrated by Democrats was the cause of Biden's eventual win. Trump refused to concede the election for months, maintaining that Biden's victory was fraudulent. To back up these claims, prominent Republicans brought lawsuits against multiple states, challenging their election results and ballot counting procedures (Ballotpedia). In addition, Trump and his supporters called for recounts in multiple states where Biden's win margin was small, including in Wisconsin and Georgia. Georgia is an especially extreme example of the lengths election officials went to in order to prove to the public that the election results were legitimate: three separate recounts were completed of the state's 2020 general election ballots (AP News, 2020).

In Arizona, state Republicans also called for the verification of election results after Biden narrowly won the state, specifically in the Democrat-majority Maricopa County. This

verification process took a different form than the formal recounts in Georgia, which were conducted by election officials. In Arizona, state Republicans hired a private election auditing firm to investigate claims of fraud. After months of legal conflicts, Cyber Ninjas released a report stating that no evidence of fraud was uncovered (AP News, 2021). County election officials criticized the process and final report, while state Republicans maintain that the audit was an important way to assuage concerns about a lack of election integrity in the state (AP News 2021).

The effects of the "Big Lie" (the nickname given to Trump's claim that the 2020 election was illegitimate) have persisted (Wolf, 2021). A poll conducted in January 2021 shows that roughly 3 in 10 Americans believe that Biden's win was illegitimate, and a similar number believe that there is evidence of fraud in the election (Washington Post, 2021). Despite this persistent belief among some Americans, the lawsuits and recounts consistently found the same result: instances of fraud were vanishingly few and were never present in large enough numbers to affect the election results.

Despite low levels of election fraud, Trump's narrative seems to have triumphed. As previously mentioned, many Republicans believe that election fraud was a major issue in 2020, and the available data on fraud has not convinced them otherwise. Perhaps many voters are unaware of the available data, or if they are aware, they do not find it convincing. How else can election officials persuade voters that their votes are secure? Following the 2020 election, many Republicans called for repeated election audits and recounts, so it seems that these procedures may be a way to combat claims of fraud and assuage fears, in a more visible and effective way than assuming that voters will do fraud research on their own. However, there is also the possibility that these procedures were simply used in the hopes of uncovering fraud, and when

the results did not match their suspicions, Republicans held onto their original beliefs and wrote off the audits and recounts as illegitimate. The question then is: can post-election audits increase voter confidence in election results? And, are they capable of assuaging the concerns of voters who already hold suspicions of voter fraud?

This question is particularly salient given the legislative goals of both Democrats and Republicans. Following the 2020 elections, legislation regarding voting and elections has increased as both parties seek to respond to the unique events of 2020. However, partisan disagreement has stalled any progress towards election reform. Democrats say they want better access to the ballot for voters, and Republicans say they want election integrity, but both disagree on how to achieve those goals. Despite this disagreement, Republicans were almost exclusively the driving force behind the numerous audits and recounts of 2020, and Democrats are currently pushing for the Freedom to Vote Act, which includes a provision requiring post-election audits (Freedom to Vote Act). On an issue that does not foster much compromise, it seems that both parties may be open to the possibility of increasing the prevalence of post-election audits. Thus, it seems plausible that post-election audits may be one of the few mechanisms of ensuring election integrity that could be a viable option for a policy compromise between Republicans and Democrats.

Clearly, this issue is politically salient. To determine whether post-election audits are a worthwhile policy goal for either party, it is crucial to uncover any relationship between audits and voter confidence, given that a crisis of voter confidence in part contributed to the current legislative storm. Do post-election audits affect voters' confidence in election results? If there is an effect on voter confidence, does the effect vary by type of post-election audit?

These are the questions that this study seeks to answer. I present legally-mandated post-election audits as a possible solution to the current crisis in voter confidence. First, I analyze data from the MIT-administered Survey of the Performance of American Elections. I investigate the average level of voter confidence in each state, accounting for party identification and whether the state in question requires any type of post-election audit. This analysis helps illuminate existing trends in voter confidence. As expected, voter confidence is lower when a given voter's preferred candidate loses an election, and is lower on average in politically competitive states. The results from this initial data find that post-election audit requirements are not associated with greater voter confidence, but most results are inconclusive and make it clear that the SPAE data alone is not sufficient for understanding the specific effects of post-election audits on voter confidence.

To further investigate this relationship, I implement a survey experiment with a nationally representative sample. This survey data reveals that post-election audits do not increase confidence in elections results for voters as a whole. Reactions to post-election audits are different between parties and whether the voter was a "winner" in their state. Partisan audits decrease confidence among Democrats and those that won in their state, and even the two nonpartisan audit groups decreased confidence for Democrats and "winners", though not significantly. The data reveals that reactions to audits are overwhelmingly predicted by party affiliation and winner status, and have become a polarized tool that voters fear could be used to overturn election results, rather than verify existing results.

Literature Review

There is clear agreement among the academic community that voter confidence in election integrity is important to the integrity of American democracy. However, the reason for its importance varies. Some literature finds that voter confidence affects voter turnout and thus may dictate how representative the voting population is of the larger American population in any given election (Claasen and Monson, 2013; Atkeson and Saunders, 2007). Other research finds that voter confidence is less related to voter turnout, but if this is true, it does not mean that voter confidence is not important (Voter Confidence, 2021). Confidence in the integrity of elections is crucial particularly when it comes to the losers of an election. In order to maintain democratic legitimacy in a country, losers of any given election must consent to the results of the election and agree to continue to participate in future elections, rather than boycotting the results or claiming a lack of election integrity based on an unfavorable outcome (Anderson et al., 2005). This idea of "loser's consent" is particularly relevant to the fallout from the 2020 election, as Trump and his supporters claimed election fraud and went so far as to challenge the final certification of election results in the January 6th insurrection. These are clear signs that loser's consent waned in 2020. Thus, it is crucial to examine the determinants of voters' thoughts on the integrity of election results, and what can be done to increase confidence, in order to preserve belief in the democratic legitimacy of the United States.

Extensive resources have been dedicated to the study of election technology and election procedures, but less literature is available that studies the factors that affect voter confidence in election results. Though there is a trove of research that analyzes what voting method is most secure, or what auditing method is most effective, this research often falls short of assessing how those choices affect individual voter confidence in election results.

A major issue is that voters are consistently confident that their own vote is counted correctly, but less confident in election results at higher levels, such as state or national levels. Proving this point, average confidence in national election results has fallen since the early 2000s (Sances and Stewart, 2014). This leads to the question: what factors affect voter confidence, and how does confidence vary between the individual and state or national level? By learning more about the factors that affect how confident a voter feels in elections results, we should be able to identify whether post-election audits could be a useful tool to counteract a lack of confidence in election results.

Demographic Determinants of Voter Confidence

It is important to understand how different demographic indicators might affect voter confidence, especially if the goal is to separate the true effect of post-election audits on voter confidence from the effect of other demographic predictors of confidence.

Notably, voter confidence in election results varies by race. In the 2020 presidential election, black voters were the most confident that their votes were counted correctly (95%), followed by white voters (84%) and Hispanic voters (85%) (Pew Research, 2020). However, this is likely more of a reflection of the fact that black voters more often identify as Democrats, and thus were more confident in election results given that Biden (the Democratic candidate) won. This indicates a clear winner's effect, which is separate from demographic indicators of confidence and will be discussed later. Generally, white voters are more confident that their vote was counted correctly than non-white voters (Hall, Monson, & Patterson, 2008; Alvarez, Hall, Llewellyn, 2008). This finding is further confirmed by a study of 2012 election results, which found that minority voters were less confident than non-minority voters in the fairness the vote count (Bowler et al., 2015).

Age is also an interesting, but understudied, predictor of voter confidence. Age is a known predictor of voter turnout. Younger voters turn out to vote less, and some scholars propose that this is due to less political interest among younger voters (Blais and Gidengil, 2004). However, age as a predictor of voter confidence in election results is less conclusive. In 2020, older voters were more confident that their vote was counted correctly than younger voters, but it is unclear if this is a long- or short-term trend (Pew Research, 2020).

Party affiliation has also been linked to voter confidence. Two 2008 studies found that Republicans were more likely to report feeling confident in their vote than Democrats (Hall, Monson, & Patterson, 2008; Alvarez, Hall, Llewellyn, 2008). However, this could be attributed to the timing of both studies, given they both analyzed election data from years in which Democrats lost the presidential election. A Republican win for the presidency in 2000 and 2004 could have contributed to a winner's effect, where the members of the winning party predictably feel more confident in the final vote tally than members of the losing party (Alvarez, Hall, Llewellyn, 2008). Illustrating the point that one party is not consistently more confident in election results, a study by Bowler et al. (2015) found that after the 2012 election, Democrats were more confident in election results than Republicans. Given Obama's win in 2012, this lends itself more to the idea of a winner's effect, rather than a long-term trend in confidence based on party.

How The Winner's Effect Influences Voter Confidence

The winner's effect is an important phenomenon to consider when studying voter confidence. Understanding it can help contextualize shifts in voter confidence, since the winner's effect produces a predictable increase/decrease in voter confidence depending on which major party won the most recent general election. When looking for changes in voter confidence due to

factors such as electoral law changes, it is important not to confuse the effect of these changes with the normal fluctuations in confidence caused by the winner's effect. Sinclair, Smith, and Tucker (2018) emphasize the impact of the winner's effect. They study the 2016 presidential election, noting the two competing influences: Trump's pre-election claims that the election system was "rigged" and the winner's effect after Trump won the presidency. The authors find that post-election confidence was higher among those that voted for Trump, due to the winner's effect, and that elite messaging from Trump about rigged elections did not depress voter confidence for very long. Sances and Stewart (2015) also find evidence of the winner's effect in U.S. elections, and assert that the effect has grown over time. Levy (2021) confirms the existence of the winner's effect in the 2016 presidential election. There is evidence that individuals deem copartisans as more trustworthy than non-copartisans, so it is not surprising that voters may feel more confident when their party leaders tell them they won the election, and less confident when told by the opponent party that their party lost an election (Carlin and Love, 2013).

In an interesting twist compared to the narrative in 2020, Levy found that in 2016, beliefs about illegal voting were only weakly correlated with voter confidence both before and after the election. Now, the issue of voter confidence seems inextricably tied to voters' beliefs on voter fraud, but according to Levy this was not the case just five years ago. Considering both the winner's effect and Levy's finding, more information is needed to determine whether the voter confidence trend in 2020 resembles past years, or if it has changed with such magnitude that a change could be contributed to something other than the predictable winner's effect. And if there is another factor at work affecting voter confidence, is it really elite messaging indicating the existence of voter fraud?

A recent study by Berlinski et al. (2021) finds that exposure to elite claims of voter fraud does indeed lead to a loss of confidence in election integrity, based on data from after the 2018 midterm elections. The authors found that Republicans were particularly affected by this messaging, given Republican elites were the main voices alleging fraud following the 2018 midterms. This finding seems to be mirrored by the 2020 election and resulting dip in Republican confidence. What is concerning is that in 2020, Trump's most avid supporters went beyond questioning the election results to actually attempt to stop the election certification on January 6th. This reaction seems to be inconsistent with past years in which losers of an election felt less confident in the results, but did not take action to overturn them. Returning to the idea of loser's consent from Anderson et al. (2005), it is concerning that there was very clear dissent from Republican "losers", to the extent that they would question the integrity of the United States' democracy. The Berlinski et al. paper further finds that "corrective messages" (i.e. fact checking) from mainstream media do not effectively counteract the effect of fraud claims on confidence in elections. If fact-checking is not an adequate tool to assuage voters' fears, then it is crucial to identify other ways that voter confidence can be increased.

Other Factors That Affect Voter Confidence

Multiple studies find that voters' experience on election day itself greatly influences their confidence that the election was properly administered and that the results were correctly reported. Claasen and Monson studied the use of optical scan systems versus direct-recording electronic voting machines (DREs) and how the choice of voting technology affects voter confidence. They found that both systems resulted in similar levels of voter confidence, provided that the voters in both the optical scan and DRE treatment groups had similar experiences on election day (Claasen and Monson, 2013). Election day experiences can include long or short

lines, competent or slow poll workers, and varying levels of organization at the polling station. Another study focused specifically on voters' interactions with poll workers on election day, and found that these interactions can have an effect on voter confidence (Hall, Monson, & Patterson, 2008). Atkeson and Saunders find evidence that in-person voting experiences influence voters' confidence (Atkeson and Saunders, 2007). These in-person experiences seem to have a profound effect on voter confidence, more so than the type of voting technology. Yet that is not to say that the type of voting technology is entirely disconnected from voters' perceptions of election integrity.

Voters like to be able to verify that their vote was received and tabulated as they intended. In addition to finding that experiences at the polling station matter, Atkeson and Saunders (2007) find that voters feel better about their vote when their polling station uses voter-verifiable paper records. Voter-verifiable paper records (or VVPR) are paper records of individual votes. When a voter votes electronically, VVPR systems print a record of the vote cast, giving the voter the opportunity to verify that the electronic machine correctly recorded their vote. Shenker and Alvarez affirm that VVPR systems are a good way to build trustworthiness into the voting system, though they criticize the complicated cryptography involved that is difficult for voters to understand (Shenker and Alvarez, 2014). A report from The Brennan Center for Justice emphasized the importance of VVPR as an important tool to detecting ballot-counting errors, but stopped short of commenting on how this related directly to voter perceptions of election integrity (The Brennan Center, 2007).

In contrast, absentee voting garners less confidence from voters. Multiple studies obtain results showing that voters are less confident that their vote was counted correctly when they vote by mail, since there are less opportunities to confirm that their vote was received and

recorded correctly (Shenker and Alvarez, 2014; Atkeson and Saunders, 2007; Alvarez, Hall, Llewellyn, 2008).

Possible Utility of Post-Election Audits

Though they acknowledge that VVPR systems are a reasonable option for increasing voter confidence, Shenker and Alvarez (2014) argue that post-election audits are a better and less complicated way to verify the integrity of an election. Experts on post-election audits specifically laud risk-limiting audits as the best method for catching any election tallying mistakes. Risk-limiting audits (RLAs) use statistical methods to ensure that any errors in counting are corrected. Compared to other types of audits, such as full recounts, RLAs use less resources because the sample used to complete the audit can often be quite small, while still resulting in incredibly informative results (Lindeman and Stark, 2012). Experts agree that the use of RLAs is crucial in order to improve election integrity, and that they are the most desirable type of auditing system (Stark and Wagner, 2012). There is even research that has discussed the possibility of expanding the use of RLAs to proportionally representative systems in Europe, given RLAs' usefulness in verifying election results (Stark and Teague, 2015).

The question remains as to whether voters will actually care about improvements in post-election audit procedures. It is possible that though experts agree on audits' usefulness, individual voters may not be swayed by education on or the implementation of post-election audits. However, Bowler et al. (2015) finds evidence that voters' perception of election fairness is significantly related to variation in the quality of election administration in U.S. states. While the study does not focus on post-election audits, the findings indicate that voters respond to differences in state election administration procedures. There is hope, then, that voters might react positively to a change in election administration procedures to include or improve post-

election audit procedures. This study looks at differences in election administration between U.S. states, given that election administration is primarily a state responsibility, and thus variation in procedures is seen mainly at the state level. Recognizing this, my research design will focus on confidence in state-level election results, given that any changes in election administration that might affect confidence would be happening at the state, not national, level. Finally, the Bowler et al. study presents a caveat to their findings, in that factors such as partisanship and minority status have larger effects on perceptions of electoral fairness than administration.

When discussing post-election audits, it is important to acknowledge the different procedures used in the auditing process. Depending on the laws and resources available in a given jurisdiction, post-election audits take different forms. While risk-limiting audits are often referred to as the golden standard by experts, only six states have statutory requirements to conduct risk-limiting audits[1]. 34 states as well as the District of Columbia instead require something known as a "traditional" post-election audit. As defined by the National Conference of State Legislatures, during traditional post-election audits, officials look at a "fixed percentage of voting districts or voting machines and compare the paper record to the results produced by the voting system." In contrast with risk-limiting audits, traditional audits always count the same number of ballots, regardless of whether the election was won in a landslide or was exceedingly close.

Though post-election audits are legally required in many states, and are common practice in others, there is little data available on how aware voters are of these requirements and procedures. Certainly, there was a widespread call for post-election audits in 2020 amidst the

[1] Ncsl.org. 2019. Post-Election Audits. [online] Available at: <https://www.ncsl.org/research/elections-and-campaigns/post-election-audits635926066.aspx> [Accessed 18 December 2021].

allegations of fraud, but this uptick in attention may not translate into an increased general knowledge of post-election audits. This is where the literature on voter confidence is lacking. Very little literature focuses on ways to increase voter confidence after the vote has been cast, and very little literature investigates the extent to which voter awareness of counting procedures and post-election audits affects voter confidence. My research seeks to fill this gap, investigating how voter confidence might be increased after voters cast their ballots through post-election auditing.

Beyond filling a gap in the literature, my research provides information on the value of post-elections audits as a tool to increase voter confidence. Given the crisis in confidence among Republican voters following the 2020 election, it is crucial that tools for increasing voter confidence be studied. The motivation for studying post-election audits is that Republicans, including Trump himself, called for audits of the election, which indicates that audits may be one of the election reforms to which Republicans might be receptive. Democrats have also mentioned improving post-election audits in their recent legislative proposals, so if post-election audits have value in increasing voter confidence, they could be a nonpartisan compromise. The results of this study could inform whether further efforts to legally require post-election audits would be a worthwhile legislative undertaking for both parties.

Theory

The literature available considers many aspects of elections and how those factors may affect voter confidence in election results. Yet very little of the research focuses specifically on post-election audits. Despite this gap in the literature on voter confidence, experts tend to agree that post-election audits are a good tool to improve election integrity, especially since it is difficult to regulate individual voting experiences on election day.

The existing literature also seems to indicate that voters feel more confident when they personally experience signals of election integrity and competence among election workers. In-person voting experiences have a large effect on voters, because they get to experience firsthand the competence (or incompetence) of poll workers and their election officials. Furthermore, voters prefer in-person confirmation that their vote was recorded, as is demonstrated by the trend in voters' preference for voter-verifiable paper records.

This information contributes to my theory of signals of integrity. This theory posits that voters are more confident in election results when they experience "signals of integrity". For example, voters feel more confident in their individual vote and election results as a whole when they are able to see that their vote was recorded correctly and when they have an in-person voting experience that indicates to the voter that their vote is private, that their polling station is well-run, and that their poll workers are competent.

This fits with the evidence that most voters are confident in their own vote, but are not always confident about election results at higher levels, like state or nationwide vote counts. This is because voters do not experience these signals of integrity in connection with state and nationwide votes: election procedures vary by state and county, and thus a single voter with an average understanding of elections cannot assess the integrity or legitimacy of an election state- or nationwide. If perhaps the entire nation could agree on one type of voting machine to use and a strict set of procedures for poll workers to follow, and then publicized these regulations, then voters could be convinced that elections nationwide are counted accurately. In this way, the signals of legitimacy that most voters experience could be homogenized and displayed to voters in a way that increased voter confidence about the nationwide vote count. Yet this seems logistically and legally improbable.

Additionally, voting by mail deprives voters of these signals of integrity and competence, decreasing their confidence in their own vote. The existing literature confirms that voters who vote by mail feel less confident that their vote is counted correctly. The deprivation of signals of integrity when it comes to VBM is twofold: voters do not get to assess integrity by voting in person or interacting with poll workers and election officials, and they do not get the chance to confirm that their vote was recorded correctly, as is the case with voting in person on a VVPR machine. The same idea applies to a voter's confidence in their state election results. When voting in person, a voter can experience signals of integrity that not only boost confidence in their individual vote, but also boost their confidence in the state-wide election results. Voting in person gives them an idea of the tools that state has in place to accurately count all votes cast at the polls. However, voters cannot experience the same signals of integrity when it comes to other voters that are voting by mail. Since voters cannot observe mail-in ballots being received or counted, as they could if they were to observe the voting process in person, they cannot decide whether their state is fairly and competently counting these absentee votes.

Post-election audits are a tool that, if implemented nationwide, could assure voters of the integrity of election results, without the need for a complete overhaul of the election system. Post-election audits can be categorized as an additional "signal of integrity," or simply a signal that demonstrates to voters that their and other voters' votes are being double-checked and handled with great care and attention. As an additional signal of integrity, audits could increase confidence among voters who vote by mail, since this after-the-fact "check" of election results would provide confirmation of electoral integrity that absentee voters often lack. Thus, post-election audits could be particularly helpful in increasing confidence among absentee voters, as

an audit can serve as a substitution for the ability to personally check that one's vote was recorded correctly when using VVPR methods.

According to this theory of signals of integrity, post-election audits could increase confidence in election results, especially among voters who vote by mail. This is an especially important consideration following the wake of the COVID-19 pandemic. The pandemic forced many states that rarely allow voting by mail to quickly accommodate a large influx of mail-in ballots, given concerns about exposure to the virus during in-person voting. This increase in vote by mail garnered criticism among those who believed the that election officials were not prepared to securely handle such an influx of mail-in ballots. Some of this criticism formed the basis of election fraud claims. On the other hand, some voters enjoyed the increased flexibility of voting from home, and encouraged their states to expand absentee voting in the future. Given the increased focus on voting by mail, and the knowledge that absentee voters are generally less confident in their vote, it is crucial to revisit the importance of post-election audits and analyze how they might support voter confidence in the face of administrative electoral changes. Furthermore, the shift in 2020 voter confidence trends extends beyond the magnitude of the normal winner's effect, meaning it is especially important to study how voter confidence can be restored in order to mitigate damage to our democracy.

In analyzing the effectiveness of post-election audits as a signal of integrity, it is also important to establish what type of audit might increase voter confidence the most. Though post-election audits have many moving parts and thus can be conducted in a variety of ways, for the sake of simplicity this study compresses the audit types considered into three categories: traditional audits, risk-limiting audits, and partisan audits. Table 1 illustrates the basic differences between these three audit types. It should be noted that the line between audit types is

often very thin. Even if a state requires a traditional audit, there will be some variation in the way that jurisdictions within the state will conduct their audit. In some cases, states are categorized as requiring traditional audits, but have legal provisions that require a pilot program to test risk-limiting audits in some jurisdictions. Though these audit categories may become blurry in some cases, this study bases each state's audit requirement categorization on their legally required main form of post-election auditing.

Audit Type	**Who Conducts the Audit**	**General Procedure**	**How is the amount of ballots to be audited decided?**
Traditional	Election officials	A portion of ballots are hand counted or counted using a secondary machine, these results are compared to the tabulated results recorded by the original tabulation machine.	A fixed percentage of voting districts or machines are audited, no matter the size of the margin by which the election was won.
Risk-limiting	Election officials	Designed to limit the risk that a contest is certified with the wrong winner. It does this by increasing the initial sample when discrepancies are found until either the level of confidence has been met or a full recount has been performed. Statistical methods are used to determine the likelihood that the audit will correct any mistakes.[2]	Depends on the margin by which the election was decided. Closer elections require more ballots to be audited, larger margins mean less ballots need to be counted.
Partisan	Private auditing firm and members of the losing party	Members of the losing party in the state call for an audit, and partner with a private election auditing firm to	No universal procedures

[2] Morrell, J., 2021. Risk-Limiting Audits. [online] Ncsl.org. Available at: <https://www.ncsl.org/research/elections-and-campaigns/risk-limiting-audits.aspx> [Accessed 18 December 2021].

		investigate the election results in the state. A final report is released detailing the firm's findings at the end of the audit.	

Table 1.

Hypotheses

Based on this theory of signals of integrity, the results from this study should show that post-election audits increase election confidence in voters, relative to a control where voters are not made aware of a potential post-election audit:

H1: Confidence in election results will increase for respondents that are told that a post-election audit will be held in their state, relative to a control condition.

However, the presence or absence of post-election audits is not the only consideration. In this study, audits are broken up into three distinct types: traditional, risk-limiting, and partisan. The type of post-election audit matters, but only when voters are made aware of these differences. Most voters are uninformed on audit laws and types. However, when presented with pared-down information about audit types, the voters will form disparate opinions on the efficacy of the audits based on their understanding of the simplified procedures.

H2: In keeping with the trend seen in 2020, Republicans in this study will exhibit lower baseline voter confidence, but will experience a greater increase in confidence when presented with an audit treatment, compared with Democratic respondents. The opposite would be true if data were pulled from a year in which Democrats lost the general election.

Elite messaging from Donald Trump to his Republican followers spread the myth of election fraud. This messaging, along with the well-documented winner's effect, presumably caused a drop in confidence among Republican voters. I hypothesize that this drop in confidence will be confirmed by the available data, and further that Republican voters will exhibit a larger change in confidence when presented with an audit treatment, compared to Democrats, whose higher baseline confidence will be largely unchanged by the treatment. If this study extended its scope to look at years when Democrats lost the general election, the trend would be reversed, with Democrats both less confident and more likely to experience a change in confidence when presented with an audit treatment. Thus, I expect to see heterogenous effects depending on the respondents' party and which party won the most recent general election.

H3: The change in confidence from 2020 to 2022 will increase more for treatment group 2 (risk-limiting audit condition) than for treatment group 3 (traditional audit condition).

According to election experts, risk-limiting audits are the golden standard for post-election audits. Compared to a traditional audit that does not use the statistical methods used in RLAs, risk-limiting audits should increase voter confidence more. This is based on the assumption that voters will read about the statistical procedures used in a risk-limiting audit and as a result perceive this as a more competent way that a simple traditional audit to audit an election, and thus a stronger signal of integrity.

H4: The change in confidence from 2020 to 2022 will increase more for treatment group 3 (traditional audit condition) than for treatment group 4 (partisan audit condition).

Additionally, I hypothesize that the traditional audit will increase confidence among voters more than the partisan audit treatment (but still less than the RLA treatment). This is

based on the theory that any type of audit will increase voter confidence more than the control (complete absence of an audit), but that the inclusion of partisan actors may elicit a less confident response than for a traditional audit that does not mention partisan actors. This hypothesis includes complicated partisan considerations. According to Carlin and Love (2013), individuals think members of their own party are more trustworthy than members of the other party. This leads to the conclusion that a post-election audit led by partisan actors could actually increase confidence in election results among voters that identify with the same party as the auditors, even more than another type of audit completed by nonpartisan actors could. However, this effect is counteracted by non-copartisan distrust. Voters who identify with the opposite party as the auditors will see this partisan audit as less trustworthy, and this type of audit will decrease their confidence in election results. Given these heterogenous effects that depend on the party of the party of the respondent and the auditors, the average effect on voter confidence caused by a partisan audit treatment will be very small.

SPAE Data Analysis

State-level Confidence

In order to better understand the trends in U.S. voter confidence, I conducted data analysis using data from the Survey of the Performance of American Elections. This uncovered existing trends in voter confidence and allowed me to investigate if these trends could be related to election audit laws.

I compared data from the SPAE 2016 and 2020 surveys. First, I calculated an average score of voter confidence for each state. This was based on a question in both years of the

survey, where respondents were asked how confident they were that election results in their state were recorded and reported correctly. I also looked at voters' confidence in the national vote count, but in the following section all voter confidence scores pertain to how confidence voters from a given state are that the election results reported by the state they live in are correct. It is important to note that voter confidence is measured on the SPAE as a four-point Likert scale structured as follows:

1. Very confident

2. Somewhat confident

3. Not too confident

4. Not at all confident

9. I'm not sure

In order to make my figures more intuitive, I recoded the confidence variable to fit on a 0-1 scale. A score of 0 indicates a choice of 4 on the survey, .333 a choice of 3, .667 a choice of 2, 1 a choice of 1, and NA replaced all values of 9.

The next step was to group states by their audit requirements, because I am interested in investigating whether there is a relationship between audit laws in a state and voter confidence. I split the states into three groups. The first group includes states that do not legally require post-election audits statewide. The second group (which includes the largest number of states) includes states that legally require traditional post-election audits, as defined earlier. The third group includes states that legally require risk-limiting post-election audits. For each of these three groups, I calculated a weighted average voter confidence score.

Contrary to my hypotheses, I found that on average, voters in states without audit requirements are the most confident. In 2016, RLA states were more confident than traditional audit states, but in 2020 traditional audit states were more confident than RLA states. However, this difference between all three groups' average confidence scores is very small. The results for 2016 and 2020 can be seen in Figure 1.

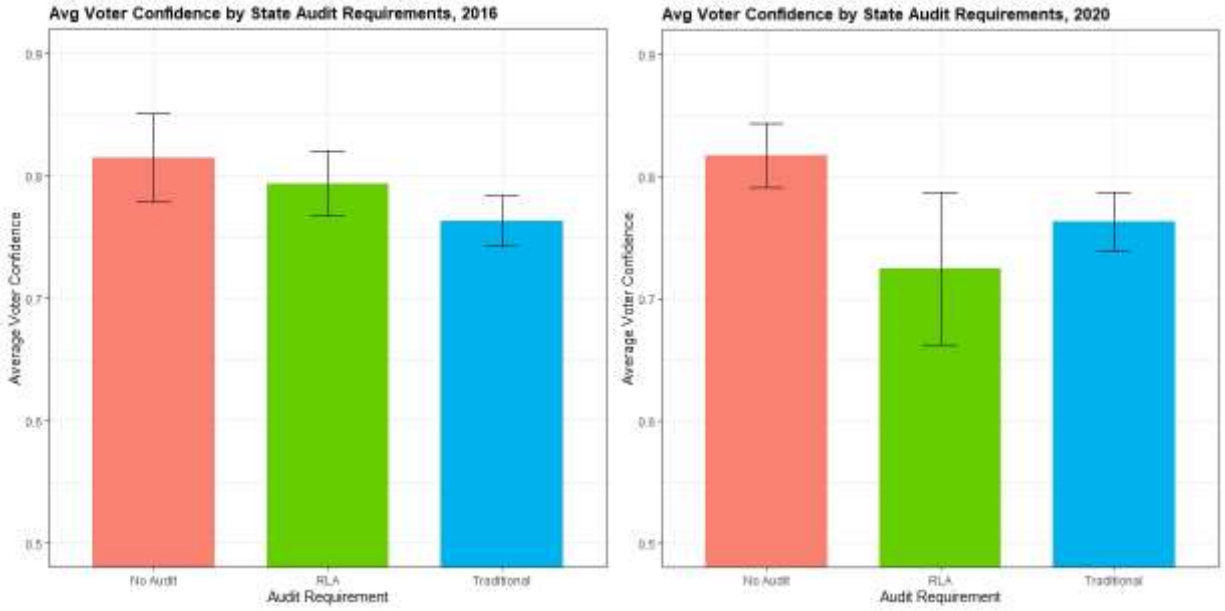

Figure 1. Each bar represents an average voter confidence score for a group of states that have the same audit requirements (No audits, risk-limiting audits, or traditional audits).

Year	**No req. vs Traditional**	**No req. vs RLA**	**Traditional vs RLA**
2016	<.001***	0.010***	0.315
2020	<.001***	<.001***	<.001***

Table 2. P values for each comparison of means

The difference between the voter confidence average for states without audit requirements (pink bar) and states with audit requirements is statistically significant. Meaning, when compared to states with traditional audit requirements or RLA requirements, states with no

audit requirements had a statistically significantly higher average in voter confidence. The difference in voter confidence between the two types of audit requirements was not statistically significant in 2016, but was significant when looking at 2020 data.

These results do not fit with my hypotheses, and in fact contradict hypotheses 1 and 3. In contrast with the graphs above, I expected to see greater voter confidence in states with an audit requirement. Instead, states with no audit requirements were on average more confident than states with either type of audit requirement. Yet these results are not definitive. Simply lumping the states into three groups based on their legal audit requirements leaves many confounding variables unaccounted for. For example, there are states that require traditional audits statewide, but that have started pilot programs to test out risk-limiting audits in some jurisdictions. Might this blur the lines between groups and have an effect on the confidence score that is calculated for that state? Another question worth asking is whether states with audit requirements have overall less confident voters, thus dictating the need for increased signals of integrity, leading to the adoption of audit requirements? If the states in the traditional or RLA groups were to suddenly rid themselves of audit requirements, would their average voter confidence plummet? These questions indicate that there are many factors affecting voters in each state that are not accounted for in this preliminary data analysis. The SPAE provides helpful data on general voter confidence trends, but these trends cannot be attributed to specific causes such as post-election audits without additional survey research.

Given the questions that remain after grouping voters by state audit requirements, it was important to take a closer look at how voters vary by state, and whether party affects how

confident a voter feels in their state's election results. I separated respondents by their reported party identification (Democrat or Republican), and calculated a voter confidence average for both parties for each of the 50 states. The states on the y-axis are sorted by the political competitiveness of the state in that election year. I did this for both 2016 and 2020 SPAE data.

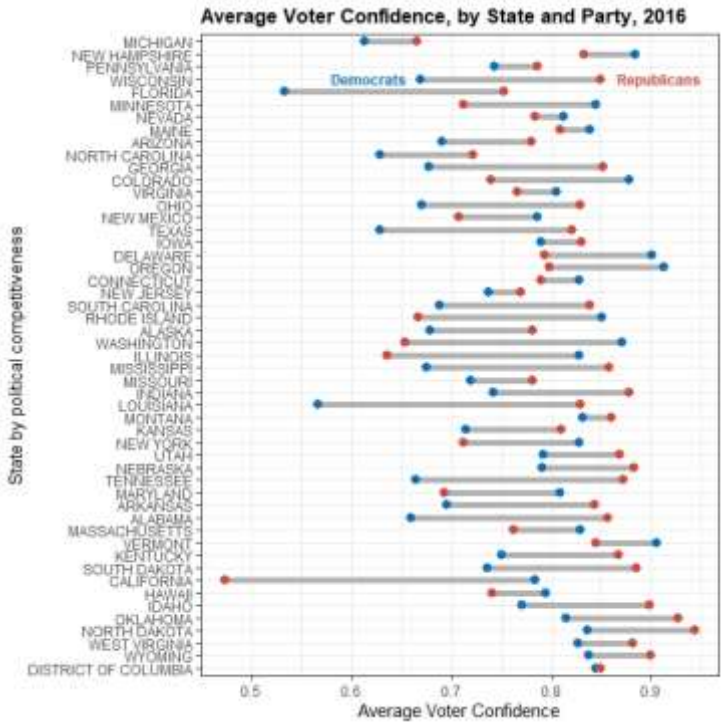

Figure 2. 2016 data, each line represents one state.

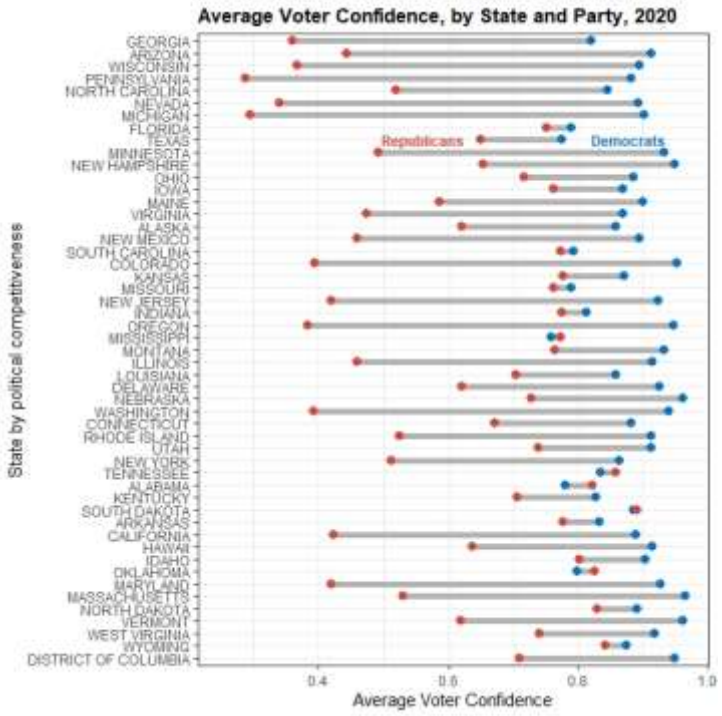

Figure 3. 2020 data, each line represents one state.

At the state level, the winner's effect is evident in 2016. In every state where Trump (and thus the Republican party) won, Republican voters were more confident in their state's election results than Democrats. Similarly, in all except four of the states that Clinton won, Democratic voters in those states felt more confident in the state's election results than the state's Republican voters did. This lines up with the idea of the winner's effect: when presented with state-level results showing that their preferred candidate won, voters felt more confident in those election results than those in the state whose preferred candidate lost. The 2016 graph seems to indicate that the national outcome didn't matter as much in terms of confidence at the state level. Even if Democrats were less confident than Republicans in the national election results, given that Clinton lost, they still overwhelmingly felt confident in state-level election results that showed her winning their state.

The 2020 graph shows something different. Trump won 25 states in 2020. According to the dumbbell plot, Republicans were still less confident in their state's election results in 22 out of those 25 states. In contrast to 2016, voters who lived in states where their preferred candidate won did not automatically feel more confident in the state's election results. Across the board in 2020, Democrats felt more confident about state level election results than Republicans in the same state, even in states where Biden lost. Republicans felt less confident about state election results than Democrats, even in states where Trump won. This indicates that feelings about the national level election results bled down into confidence at lower levels.

Additionally, the 2020 graph shows a much larger gap in confidence between Republicans and Democrats for the most politically competitive states, compared to 2016. Though there is some variability in the gap in confidence in 2016, the three most politically competitive states have relatively small gaps in confidence between Republicans and Democrats in those states. In contrast, the 2020 graph shows that the most politically competitive states had huge gaps in confidence relative to 2016, with Republicans significantly less confident than Democrats. This growing gap in confidence between the parties further emphasizes the shifting levels of voter confidence, and the need for a tool that could reconcile the very different confidence levels for the two parties.

National-level Data

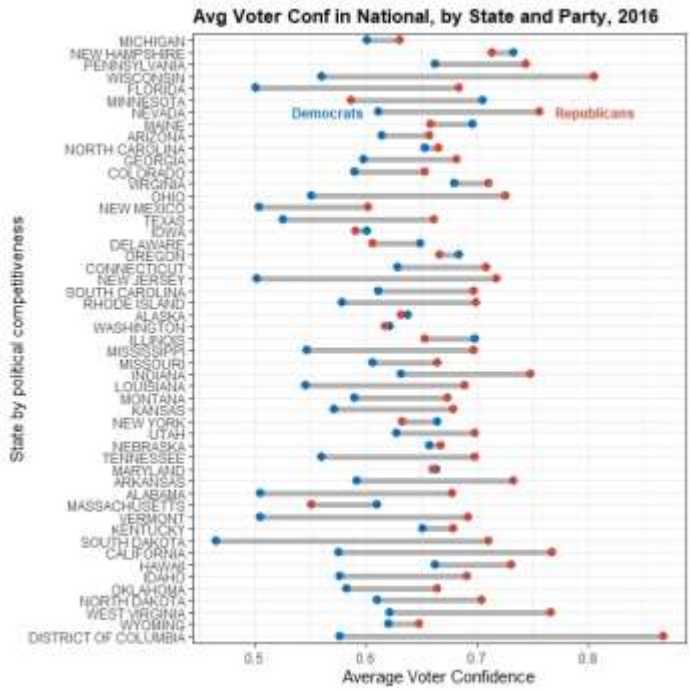

Figure 4. Respondents were asked about their confidence in the national election results, still split by state, 2016.

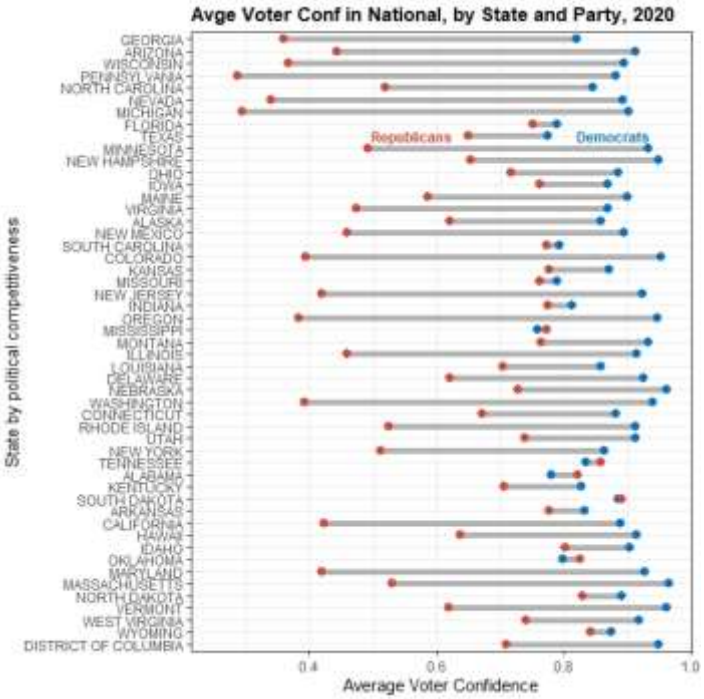

Figure 5. Respondents were asked about their confidence in the national election results, still split by state, 2020.

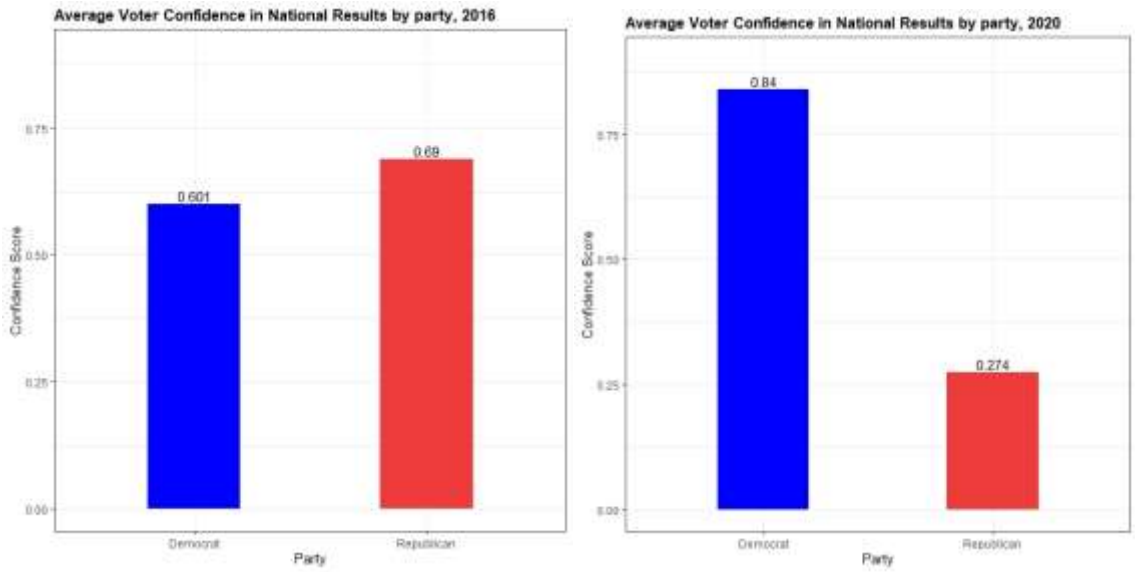

Figure 6. Average voter confidence in the national election results for the presidency by party.

In Figures 4 and 5, I changed the data used in the graphs to look at respondents' answer to a question regarding confidence in election results at the national level. In agreement with past literature, the winner's effect can be seen in both graphs when using data that focuses on voters' confidence in nationwide election results. In 2016 (Figure 4), Republicans were overall more confident in the national election results than were Democrats, in nearly every state. This makes sense, given that Republican Donald Trump won the presidency in 2016. In 2020, Republicans were on average much less confident in the national election results than Democrats, as can be seen both in the state-by-state view in Figure 5 and in the overall national average in Figure 6. This also fits with the idea of a winner's effect, given Democrat Joe Biden's win for the presidency. Also interesting is that in 2016, though Democrats were on average less confident, there were many states where the difference in confidence between Democrats and Republicans was not very large. However, in 2020, the parties seem to be much more polarized, holding vastly different confidence levels. If this trend persists, it will be crucial that states do what they can to reassure voters and preserve faith in the democratic and electoral process.

This polarization in voter confidence is not the only interesting interpretation of this data. Comparing the state and national graphs for 2020, the pattern is similar: if Republican voters in a given state felt a lack of confidence in the national election results, they also doubted their state's election results, even in states where Trump won. In contrast, in 2016, there was a difference to be seen between the two graphs. Generally, even if voters of a party in a given state were not confident in the national election results, they were still confident in their state's election results if their favored candidate won in their state. In 2020, Democrats felt more confident that the final national election results for the presidency were correct, and Republicans felt much less confident that this was true. This itself is not surprising, because this fits with the theory of the winner's effect: Biden won, and thus Democrats at the national level were more confident than Republicans. But this trend didn't change at the state level as it did in 2016. In 2020, Republican voters were not more confident than Democratic voters in state level election results, even in states where Trump won. This indicates the possibility that there has been a change in how voters form their confidence in election results. In 2020, and possibly going forward, confidence at the state level may be driven more by the national election results and elite messaging than anything that a single state might do to increase electoral integrity and increase voter confidence. The available data indicates that this is more likely to be true for Republicans, given the evidence showing that their state-level confidence mirrored their national-level confidence.

This trend does not bode well for states that may wish to make administrative changes to improve voter confidence in election results. Alongside this finding, the evidence discussed earlier in this section indicates that post-election audits, and any changes made to increase their prevalence, may have little to no effect on voter confidence at the state or national level. If Republican voter confidence in 2020 did not respond to state-level differences, then Hypothesis

2 begins to look weak. Yes, Republicans seem to have a baseline lower confidence. But the existing evidence indicates that Republican voters would be more influenced by elite messaging than by changes made in their state's electoral process, such as the introduction of a legally-required post-election audit.

Given the preceding analysis, it is clear that party and the winner's effect are related to voter confidence. More testing will need to be done to determine how those factors interact with an audit treatment to affect voter confidence. Before this testing, however, it is important to consider other demographic predictors of confidence as referenced in the existing literature.

For example, age and race are two possible predictors of confidence. To see whether these factors should be considered in my own study of change in confidence as a reaction to an audit treatment, I ran regressions using age and race as predictors of average confidence for the 2016 and 2020 SPAE data. I compared these regressions to regressions that used party and whether a voter was a "winner" in their state, to see what predictors were worthwhile considerations in my analysis moving forward. I found that in 2016, all four predictors were relatively similar in their ability to predict voter confidence. However, in 2020, it was clear that party and the winner condition were much stronger predictors of confidence, compared to age and race. The coefficients for party and the winner condition in 2020 were of much larger magnitude than age or race. Further, the R squared values for the winner condition and party were much larger than age or race in 2020, indicating that the first two predictors account for much more of the variability in confidence. Thus, I conclude that though age and race may have some effect on voter confidence, given the results of the 2020 regression I can be confident that party and winner condition will be more important predictors to consider in my own experimental analysis.

2016 SPAE: Predictors of Confidence Regressions

SPAE 2016, Average Confidence by Age				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	3.85782	0.36999	10.42694	**<0.001**
Birth Year	-0.00156	0.00019	-8.30104	**<0.001**
Observations	6808			
R^2 / R^2 adjusted	0.010 / 0.010			

Table 3.

SPAE 2016, Average Confidence by Party				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.77627	0.00464	167.39494	**<0.001**
Republican	0.04454	0.00685	6.50535	**<0.001**
Independent	-0.02316	0.02378	-0.97408	0.330
Observations	5752			
R^2 / R^2 adjusted	0.008 / 0.008			

Table 5.

SPAE 2016, Average Confidence by Race				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.81363	0.00361	225.18941	**<0.001**
Black	-0.13903	0.01009	-13.77568	**<0.001**
Hispanic	-0.07955	0.01282	-6.20543	**<0.001**
Asian	-0.10397	0.02738	-3.79780	**<0.001**
Native American	-0.11910	0.02899	-4.10773	**<0.001**
Two or More Races	-0.13068	0.02200	-5.93991	**<0.001**
Other	-0.05110	0.02818	-1.81314	0.070
Middle Eastern	0.03923	0.07622	0.51465	0.607
Observations	6808			
R^2 / R^2 adjusted	0.037 / 0.036			

Table 4.

SPAE 2016, Average Confidence by Voter Was Winner				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.73190	0.00497	147.36437	**<0.001**
Winner	0.11487	0.00673	17.05638	**<0.001**
Observations	5577			
R^2 / R^2 adjusted	0.050 / 0.049			

Table 6.

2020 SPAE: Predictors of Confidence Regressions

SPAE 2020, Average Confidence by Age				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-1.60421	0.27843	-5.76172	**<0.001**
Birth Year	0.00119	0.00014	8.40663	**<0.001**
Observations	17503			
R^2 / R^2 adjusted	0.004 / 0.004			

Table 7.

SPAE 2020, Average Confidence by Party				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.88899	0.00316	281.10240	**<0.001**
Republican	-0.32310	0.00468	-68.98599	**<0.001**
Independent	-0.17736	0.01891	-9.37861	**<0.001**
Observations	15334			
R^2 / R^2 adjusted	0.237 / 0.237			

Table 9.

SPAE 2020, Average Confidence by Race				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.72509	0.00281	258.48693	**<0.001**
Black	0.09745	0.00833	11.69441	**<0.001**
Hispanic	0.02735	0.01014	2.69829	**0.007**
Asian	0.04840	0.01989	2.43327	**0.015**
Native American	0.02871	0.03078	0.93270	0.351
Two or More Races	-0.02347	0.02149	-1.09212	0.275
Other	-0.09554	0.02263	-4.22286	**<0.001**
Middle Eastern	0.17535	0.07296	2.40358	**0.016**
Observations	17503			
R^2 / R^2 adjusted	0.010 / 0.009			

Table 8.

SPAE 2020, Average Confidence by Voter Was Winner				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.62313	0.00376	165.88745	**<0.001**
Winner	0.21305	0.00505	42.22395	**<0.001**
Observations	15334			
R^2 / R^2 adjusted	0.104 / 0.104			

Table 10.

Political Competitiveness of States as a Predictor of Confidence

Looking back at state audit requirements, there are many unanswered questions that further research will clarify. However, one variable that can be accounted for is the electoral competitiveness of each state. In the original comparison of confidence by state audit requirements (Figure 1), states were simply separated by audit requirement. In Figure 7, I assigned a political competitiveness score to each state, based on 2016 and 2020 democratic presidential candidate vote shares in each state.

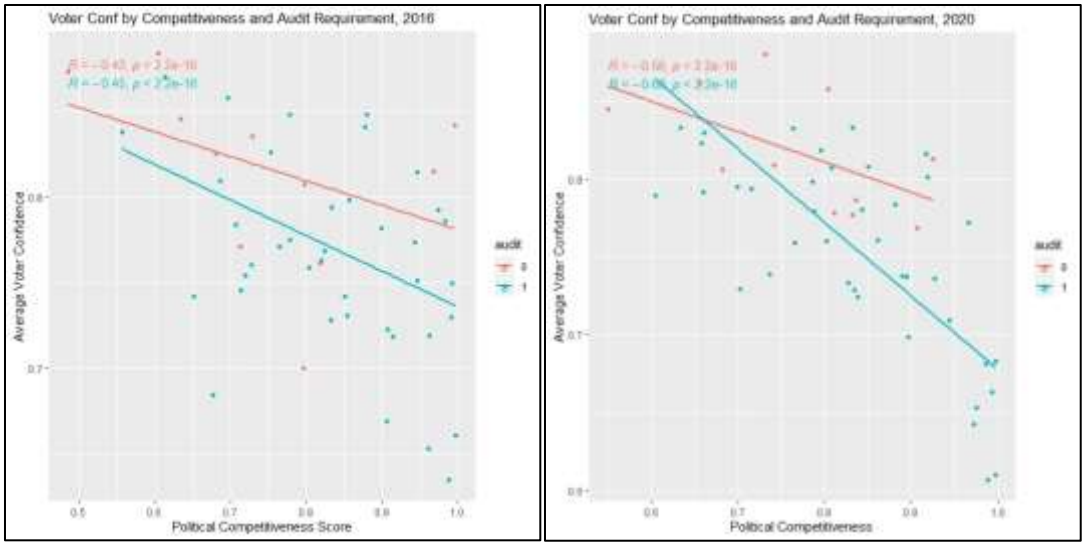

Figure 7. As x increases to 1, states are more politically competitive (closer to a 50/50 split). Blue points are states that require audits and red dots are states that do not require audits. Washington, D.C. has been removed from the data for both years as it is an outlier in terms of both political competitiveness (very low) and voter confidence (very high).

In both years, states with audit requirements are on average less confident than states without audit requirements. As previously stated, this may be due to audits being a response to low voter confidence in a given state. As expected, average voter confidence in election results decreases as electoral competitiveness increases, since closer elections may give rise to more questions about how accurate the counting process was. However, if the theory of audits as a signal integrity were to hold, we would expect to see voter confidence decrease at a slower rate as competitiveness increases for states with audits, compared to states without audits. This trend does not hold true in 2016 or 2020. Confidence decreases at a faster rate for states with audits compared to the no-audit states as political competitiveness increases. This trend is particularly dramatic in the 2020 data. This seems to indicate that in both years, and 2020 most notably, audits were not a helpful tool for mitigating decreases in voter confidence when elections in certain states were highly competitive. To confirm these trends, I ran three regression models using the 2020 data. The first model measures the effect of having an audit requirement on voter

confidence, the second measures both the effect of audit requirements and political competitiveness, and the third measures the effect of the two predictors plus their interaction.

Confidence Models

	Dependent variable		
	conf2		
	(1)	(2)	(3)
competitive		-0.439***	-0.194***
		(0.023)	(0.066)
I(audit * competitive)			-0.280***
			(0.070)
audit	-0.095***	-0.036***	0.185***
	(0.008)	(0.008)	(0.056)
Constant	0.817***	1.155***	0.967***
	(0.007)	(0.019)	(0.051)
Observations	17,309	17,309	17,309
R^2	0.009	0.029	0.029
Adjusted R^2	0.009	0.028	0.029
Residual Std. Error	0.329 (df = 17307)	0.326 (df = 17306)	0.326 (df = 17305)
F Statistic	153.395*** (df = 1; 17307)	254.612*** (df = 2; 17306)	175.150*** (df = 3; 17305)
Note:			*p<0.1; **p<0.05;** p<0.01*

Table 11.

In the full regression model (Figure 8), there is significant evidence that the presence of a post-election audit is associated with an increase in voter confidence only when a state is not politically competitive. This is finding is not an encouraging sign for the usefulness of audits, given that ideally, an audit would be most helpful in assuaging fears of election errors or fraud in politically competitive states. Still, this analysis of the SPAE data is limited in that there are too many factors beyond state audit requirements that influence confidence, and thus further study is needed in the form of a survey experiment.

Cooperative Election Survey Experiment Methods

Since it is difficult to know whether to attribute any differences in statewide voter confidence to state post-election audit requirements, I created a survey experiment to specifically study the relationship between knowledge of post-election audits and voter confidence.

The dependent variable of this experiment is voter confidence. This is measured using the same four-point Likert scale as used in the SPAE:

How confident are you that your vote in the [election] was counted as you intended?

1. Very confident
2. Somewhat confident
3. Not too confident
4. Not at all confident
9. I don't know

After receiving the results, these responses were recoded to a 0-1 scale, in the same way as the data from the SPAE, with 0 being lowest confidence and 1 being highest confidence. A score of 0 indicates a choice of 4 on the survey, .333 a choice of 3, .667 a choice of 2, and 1 a choice of 1.

The treatment variable in this survey is an audit vignette and subsequent audit treatment. Respondents to the survey were randomly assigned to one of four groups. The first group is a control group, and the respondents of this group was not presented with any information on post-election audits, to gain a baseline understanding of the respondents' average confidence in the 2020 and 2022 elections. The three remaining groups were given information about different types of post-election audits. The three types of audits used as treatment conditions were risk-limiting audits, traditional audits, and partisan audits.

The survey questions appeared on the Cooperative Election Survey, which is a national stratified sample survey administered by YouGov. The questions measure voter confidence in

the same manner as the Survey of the Performance of American Elections (SPAE), in order to allow for comparison to voter confidence in past years.

First, all respondents were asked to rate their confidence in the 2020 presidential election results at the individual, county, state and national levels. Then, later in the survey, the respondents were presented with a vignette with information about a post-election audit. This vignette is the first treatment in the experiment. This first treatment is simply presenting treatment groups with knowledge about post-election audits, such as the general definition and procedures. After reading the vignette, participants were asked about how confident they felt in their state election results for the upcoming 2022 election. This post-vignette question, which will be used to measure the effect of the first treatment will hereafter be referred to as the 2022-A question. The control group (group 1) was not presented with a vignette. The three treatment groups (groups 2-4) were presented with the following vignettes:

Group 1 (Control)	No Vignette
Group 2 (Traditional Audit Treatment)	In 2020, some states conducted post-election audits that checked that the equipment and procedures used to count votes during the election worked properly. Election audits can be conducted by counting a portion of the paper records by hand and comparing them to the electronic results produced by a voting machine.
Group 3 (Risk-limiting Audit Treatment)	In 2020, some states conducted post-election audits that checked that the equipment and procedures used to count votes during the election worked properly. Election audits can be conducted by using statistical principles and methods designed to limit the risk of certifying an incorrect election outcome.
Group 4 (Partisan Audit Treatment)	In 2020, some states conducted post-election audits that checked that the equipment and procedures used to count votes during the election worked properly. Election audits can be conducted by the losing political party in an election, where the losing political party hires a private election auditing firm to investigate how the votes were counted and any allegations of fraud.

Table 12.

A second treatment followed (hereafter referred to as the 2022-B question), where the three treatment groups were told to imagine a scenario in which their state implemented the type of audit that corresponded with their treatment group. Then they were asked about their confidence in their state's 2022 election results, given the assumption that the specified audit type would be implemented. The control group was not asked any additional questions or presented with any additional information. The second treatment was presented to the three treatment groups as follows:

Group 2 (Traditional Audit Treatment)	Now, think about vote counting throughout **$inputstate**. If an election audit was conducted in your state by counting a portion of the paper records by hand and comparing them to the electronic results produced by a voting machine, how confident would you be that votes in $inputstate would be counted as voters intended in the 2022 elections?
Group 3 (Risk-limiting Audit Treatment)	Now, think about vote counting throughout **$inputstate**. If an election audit was conducted in your state using statistical principles and methods designed to limit the risk of certifying an incorrect election outcome, how confident would you be that votes in $inputstate would be counted as voters intended in the 2022 elections?
Group 4 (Partisan Audit Treatment)	Now, think about vote counting throughout **$inputstate**. If an election audit was conducted in your state by the losing party in the election, where the losing party hires a private election auditing firm to investigate how votes were counted and any allegations of fraud, how confident would you be that votes in $inputstate would be counted as voters intended in the 2022 elections?

Table 13.

It is important to note the difference between the first treatment (2022A) and the second treatment (2022B). The first treatment is simply presenting the treatment groups with basic information about their assigned audit type, followed by a question about their confidence in 2022 election results. This treatment seeks to determine if there is any effect on voter confidence when voters are simply aware of the existence and basic procedures of a post-election audit,

without being told that a post-election audit will specifically apply to their state. The second treatment (2022B) involves telling voters to assume that a certain type of post-election audit will actually be implemented in their state in 2022. This treatment seeks to determine whether voters would feel more confident in their state election results if they knew with certainty that a post-election audit would be required in their state.

Analysis of CES Experiment Data

For the analysis of these results, I focused on state-level confidence, since I am studying hypothetical changes in state-level audit laws. I first compared average voter confidence at the state level in 2020. I found that for each of the four groups (control and three treatment groups), the average pre-treatment confidence in the 2020 general election was similar for all four groups. The table below, with average confidence and confidence intervals for each group, reveals that there is no significant difference in the 2020 numbers. This is reassuring in that there is not a concentration of highly confident or extremely not confident individuals in any one group, making comparison more viable.

2020 Average Confidence by Treatment Group

EMY438_441_treat	mean20	mean20_se	mean20_low	mean20_upp
1	0.7256717	0.0248316	0.6769437	0.7743997
2	0.6857463	0.0265058	0.6337329	0.7377597
3	0.6863336	0.0264394	0.6344504	0.7382168
4	0.7148333	0.0248345	0.6660995	0.7635672

Table 14.

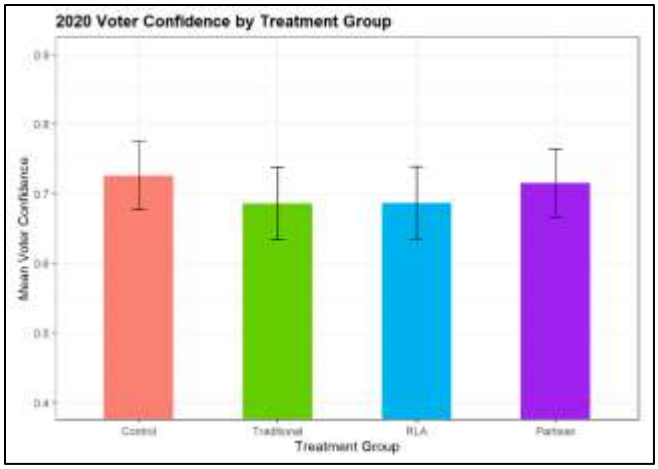

Figure 8.

First, I wanted to look at the effect of receiving any audit vignette. This entailed looking back at the change from 2020 to 2022A, now with only two groups to compare. A regression reveals that receiving general information about any type of audit (without specifically being told that an audit would be implemented in their state), caused a small positive increase in confidence among respondents. This increase, however, is not statistically significant.

2020 to 2022A Change in Confidence, Control vs. Received Vignette

audit	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.061070	0.0073770
1	-0.0118966	0.0090679	-0.029691	0.0058978

Table 15.

2020 to 2022A change in confidence, Control vs. Vignette Received

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.03604	0.01402	-2.57106	**0.010**
Vignette Received	0.02126	0.01615	1.31680	0.188
Observations	899			
R^2 / R^2 adjusted	0.002 / 0.001			

Table 16.

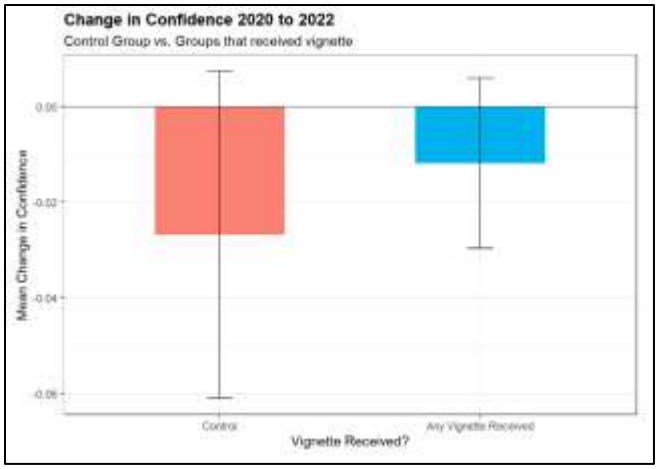

Figure 9.

Next, I applied the same condition to analyze the change from 2020 to 2022B (audit treatment). I compared the change in confidence from 2020 to 2022 for the control group to the change in confidence for respondents who were told imagine that any type of audit would be implemented in their state in 2022 (i.e. received any audit treatment). As opposed to the findings for the vignette, a regression here reveals that respondents who received any audit treatment experienced a small decrease in confidence relative to the control (this decrease is significant at the 90% confidence level). This finding contradicts Hypothesis 1, which states that telling voters that an audit of some kind will be used in their state increases their confidence in election results. Instead, it seems it could decrease confidence.

2020 to 2022B Change in Confidence, Control vs. Received Treatment

audit	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.06107	0.0073770
1	-0.0749172	0.0144383	-0.10325	-0.0465844

Table 17.

2020 to 2022B change in confidence, General Audit Treatment				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.03604	0.02048	-1.75925	0.079
Audit Treatment Received	-0.03994	0.02350	-1.69943	0.090
Observations	924			
R^2 / R^2 adjusted	0.003 / 0.002			

Table 18.

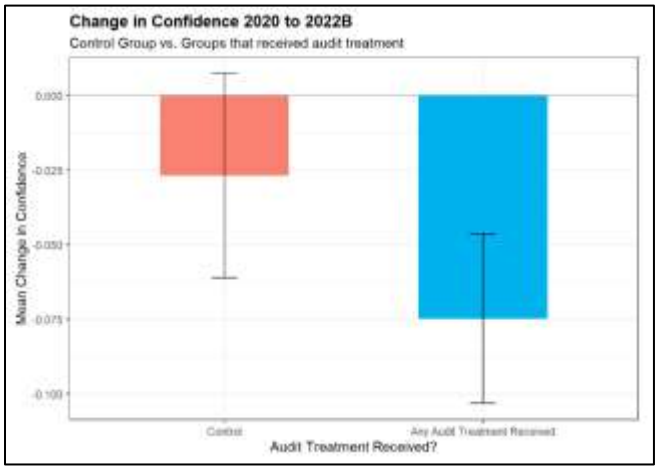

Figure 10.

There seems to be some difference in the effect of the vignette and audit treatment. Though the effects for both tests were small, it is interesting to see that simply receiving information about an audit could minorly increase confidence, while being told to specifically assume that an audit will be held in the respondent's state has the potential to minorly decrease confidence.

I then found the mean state-level voter confidence for each group for the 2022-A (post-vignette) question. The resulting table reveals that all groups experienced a small decrease in confidence compared to their 2020 confidence values, even for the treatment groups that received information about post-election audits. The confidence levels for each treatment group are quite similar to each other for the 2022A post-vignette question.

2022A Avg Confidence Post-Vignette

EMY438_441_treat	mean22a	mean22a_se	mean22a_low	mean22a_upp
1	0.7120017	0.0245938	0.6637403	0.7602630
2	0.6723308	0.0257409	0.6218184	0.7228432
3	0.6655849	0.0252587	0.6160188	0.7151510
4	0.7021174	0.0230512	0.6568831	0.7473517

Table 19.

2022A Confidence by treatment group

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.70944	0.02206	32.15422	**<0.001**
Traditional	-0.02045	0.03127	-0.65398	0.513
Risk-limiting	-0.04417	0.03081	-1.43388	0.152
Partisan	-0.00322	0.03087	-0.10446	0.917
Observations	924			
R^2 / R^2 adjusted	0.003 / -0.000			

Graph for a22 confidence levels, by treatment groups

Table 20.

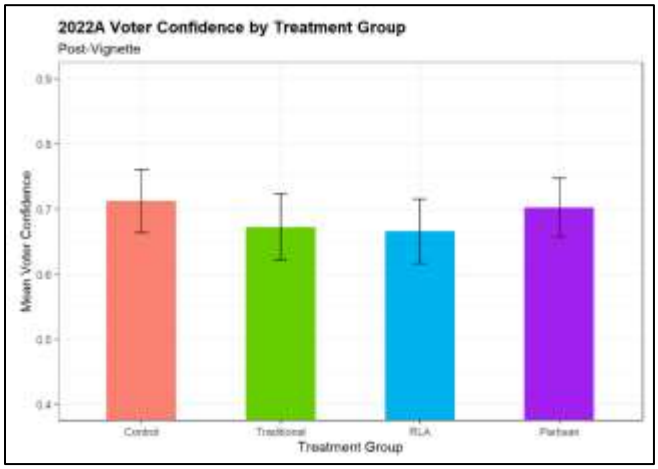

Figure 11.

To better visualize the decrease in confidence across all groups from 2020 to 2022A, I created a new column in the dataset that measured the change in confidence from 2020 to 2022A for each respondent. Then, I created a table that summarized the average change from 2020 to 2022A for each treatment group. The resulting table and graph reveal that confidence decreased for all groups, but the decrease was greatest for the control group that did not receive an audit

vignette. The three groups that received information about a post-election audit experienced smaller average decreases in confidence than the control group. However, none of these decreases were significantly different from the decrease experienced by the control group. This reveals that being presented with information on any type of audit may be enough to increase some individuals' confidence in elections, relative to a control where they are not exposed to information about an audit, but not enough to produce a significant change in average confidence. An additional TukeyHSD test confirms that the vignette treatment groups were not significantly different from the control group, and that none of the treatment groups were significantly different from each other in terms of their change in confidence from 2020 to 2022A (Table 52 in the Appendix). This indicates that it is not important what type of audit a voter receives information about, and that they reacted similarly to all the vignette treatments.

2020 to 2022A Change in Confidence Post-Vignette

EMY438_441_treat	meanchange	meanchange_se	meanchange_low	meanchange_upp
1	-0.0268465	0.0174401	-0.0610700	0.0073770
2	-0.0043682	0.0132550	-0.0303790	0.0216426
3	-0.0146466	0.0157522	-0.0455578	0.0162646
4	-0.0156925	0.0171542	-0.0493549	0.0179700

Table 21.

	2020 to 2022A change in confidence by treatment group			
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.03604	0.01403	-2.56879	**0.010**
Traditional	0.02669	0.02002	1.33293	0.183
Risk-limiting	0.02311	0.01962	1.17737	0.239
Partisan	0.01439	0.01965	0.73255	0.464
Observations	899			
R^2 / R^2 adjusted	0.002 / -0.001			

Table 22.

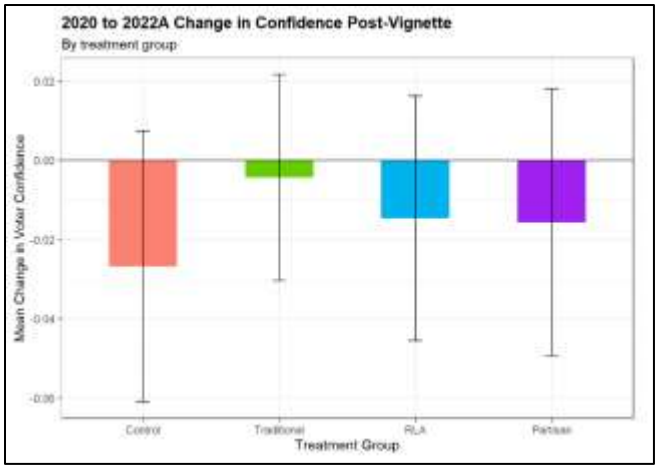

Figure 12.

Given the insignificant results related to the first treatment (vignettes only), I wanted to determine whether there was a significant difference between the control and three treatment groups for the second treatment (legally-required audit treatment). First, I compared the average confidence levels of each treatment group after they received the audit treatment to the control. I found that average confidence for each treatment group post-audit treatment was significantly lower than the confidence of the control group.

2022B Avg Confidence Post-Audit Treatment

EMY438_441_treat	mean22b	mean22b_se	mean22b_low	mean22b_upp
1	0.7120017	0.0245938	0.6637403	0.7602630
2	0.6281316	0.0262682	0.5765843	0.6796788
3	0.5893550	0.0277180	0.5349627	0.6437472
4	0.5726031	0.0261010	0.5213839	0.6238222

Table 23.

2022B Avg Confidence by treatment group				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	0.70944	0.02385	29.74967	**<0.001**
Traditional	-0.07295	0.03313	-2.20199	**0.028**
Risk-limiting	-0.10445	0.03278	-3.18627	**0.001**
Partisan	-0.13782	0.03272	-4.21203	**<0.001**
Observations	979			
R^2 / R^2 adjusted	0.019 / 0.016			

Table 24.

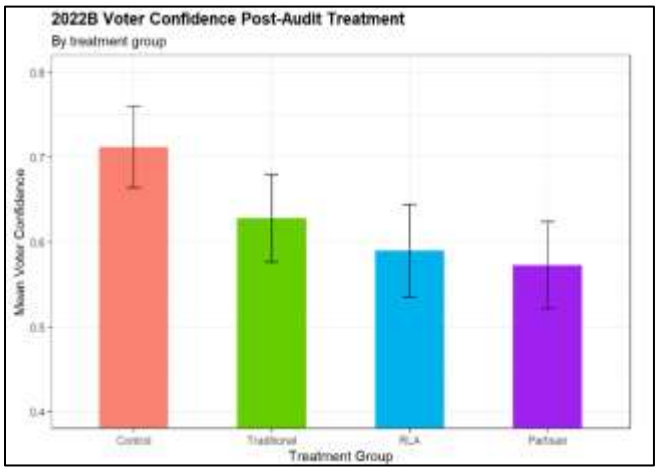

Figure 13.

However, it is more interesting to use a modified difference in difference design, to compare the change in confidence from 2020 to 2022 for the control group to the change in confidence from 2020 to 2022B for the three treatment groups. I created a new column in the dataset that measured the change in confidence from 2020 to 2022B for each respondent. Then I regressed average change in confidence on treatment group. The resulting regression reveals that though all three treatment groups had lower average confidence levels for 2022B compared to the control, only the group that received a partisan audit treatment experienced a significantly larger decrease in confidence compared to the control group. This indicates that respondents reacted similarly to the control, traditional, and RLA treatments, but experienced a significant

decrease in confidence, relative to the control, when presented with the idea of a legally required partisan audit. This suggests that voters may react negatively to the knowledge that partisan actors are playing a part in post-election audits in their state. An additional TukeyHSD test (Table 52 in the Appendix) shows that the decrease in confidence for the partisan treatment group was also significantly different from the traditional and RLA treatment groups. The effect of the traditional and RLA treatments were not statistically significant, and did not increase confidence relative to the control condition. According to the TukeyHSD test, they are also not significantly different from each other in their effect. However, as previously stated, the partisan audit treatment actually saw a significant decrease in confidence, relative to the control. Thus, it looks like traditional and RLA audit treatments were not successful in increasing confidence among voters, but that a partisan audit treatment actually significantly decreased voter confidence.

2020 to 2022B Change in Confidence Post-Audit Treatment

EMY438_441_treat	meanchange	meanchange_se	meanchange_low	meanchange_upp
1	-0.0268465	0.0174401	-0.0610700	0.0073770
2	-0.0150689	0.0192914	-0.0529252	0.0227873
3	-0.0805016	0.0269966	-0.1334782	-0.0275251
4	-0.1211744	0.0261378	-0.1724657	-0.0698832

Table 25.

2020 to 2022B change in confidence by treatment group

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
(Intercept)	-0.03604	0.02035	-1.77077	0.077
EMY438_441_treat2	0.00601	0.02878	0.20869	0.835
EMY438_441_treat3	-0.02533	0.02826	-0.89623	0.370
EMY438_441_treat4	-0.09674	0.02821	-3.42978	**0.001**
Observations	924			
R^2 / R^2 adjusted	0.018 / 0.015			

Table 26.

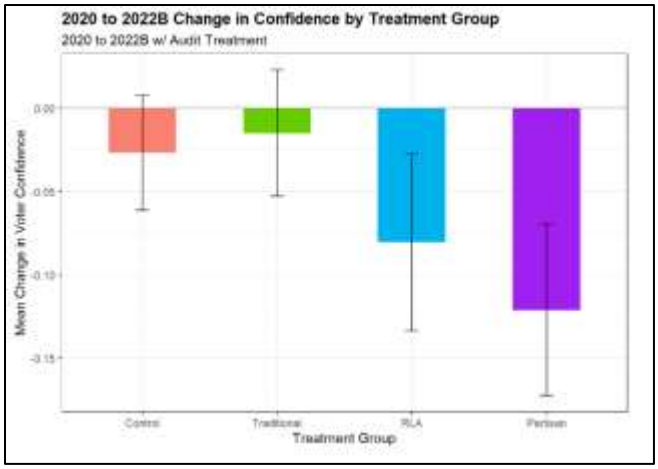

Figure 14.

Given these findings, Hypotheses 3 and 4 seem unsupported by the data. The type of post-election audit matters less to respondents than originally hypothesized. The traditional audit group experienced a smaller decrease in confidence than did the RLA treatment group, which contradicts Hypotheses 3, and the difference between the two was not statistically significant. Hypothesis 4, which states that traditional audits will be a better tool to increase confidence than a partisan audit, holds only partially. Yes, the traditional audit treatment group saw a smaller decline in confidence relative to the partisan audit treatment group, but the traditional treatment group was not actually successful in increasing confidence, nor was the partisan audit.

Clearly, the traditional and RLA audit treatments are not significantly different in their effects on confidence, and the partisan audit treatment even seems to decrease, rather than increase confidence. The remaining question, then, is whether post-election audits as a whole can serve as a signal of integrity that would increase voter confidence in election results. Rather than consider exactly what type of post-election audit treatment the respondents were given, I wanted to group all audit treatments together to see if receiving any audit treatment would lead to a smaller decrease in confidence relative to the control. This also gives the advantage of grouping

the samples for the three treatment groups together, as increasing the sample size improves the validity of the results. To investigate this question, I created a new column in the dataset that separated respondents into two groups: those that were in the control group and those that were in *any* of the treatment groups, which were sorted into one general audit treatment group. Using this control versus audit treatment condition, I could compare the change in confidence between the control group and the groups that received information about *any* type of audit.

Modifying Treatment Groups to Nonpartisan vs. Partisan

Hearkening back to the results of the test of 2020-2022B change in confidence by treatment group, it is clear that the partisan audit treatment had a larger negative effect than the other two types. The biggest distinction between the types of audits is that traditional audits and RLAs are generally conducted by nonpartisan election officials, whereas partisan audits are led primarily by the losing party. It is possible that being told that partisan actors would be the ones completing an audit would make voters feel uneasy, as many Democrats felt in response to the Republican-led Arizona audit. Thus, the inclusion of the partisan audit treatment in the general audit treatment group may depress the confidence-increasing effect of audits. Perhaps, if the traditional and RLA conditions were combined, this could result in a statistically significant result that shows that non-partisan audits may produce a smaller decrease in confidence relative to a control. The idea behind this approach is that voters seem to care very little about the actual procedures of an audit, but do seem to care about whether partisan actors are involved in the audit. By combining traditional and RLA into a single nonpartisan category, we might see that the larger sample size results in a significant positive result.

First, I looked at the change from 2020 to 2022A with the new groups as predictors: control, nonpartisan audit, and partisan audit. These new groups will be referred to as the "modified" treatment groups. The regression and graph below reveal that with the partisan audit treatment removed, the difference between the control and the non-partisan audit vignette group is still insignificant. The nonpartisan vignette group experiences a smaller decrease in confidence than the control group, but the difference is insignificant. This indicates that receiving general information about any nonpartisan audit is not enough to boost confidence in elections. The partisan vignette group experiences more of a decrease in confidence than the nonpartisan group, but less of a decrease than the control group. These results are not statistically significant, suggesting that receiving information about a partisan audit is less beneficial to voter confidence than a nonpartisan vignette, but that receiving general information about any type of audit is not enough to produce significantly different results compared to the control. This was confirmed with a TukeyHSD test, which found that no group experienced a significantly different change in confidence when compared to any other group (Table 53 in the Appendix).

2020 to 2022A Change in Confidence, Partisan Treatment Separated

audit2	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.0610700	0.0073770
1	-0.0098120	0.0104186	-0.0302569	0.0106329
2	-0.0156925	0.0171542	-0.0493549	0.0179700

Table 27.

2020 to 2022A change in confidence, Partisan Treatment Separated

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.03604	0.01402	-2.57017	**0.010**
Non-Partisan Audit Treatment	0.02483	0.01716	1.44677	0.148
Partisan Audit Treatment	0.01439	0.01983	0.73295	0.464
Observations	899			
R^2 / R^2 adjusted	0.002 / 0.000			

Table 28.

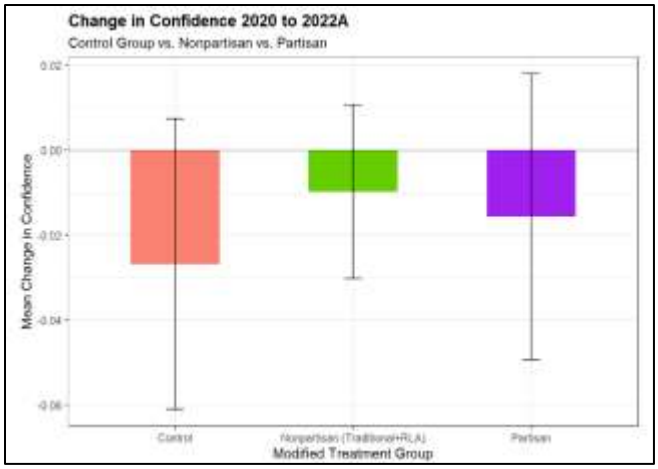

Figure 15.

With evidence that the vignette does not have a significant effect on confidence, even when sorted into the partisan/nonpartisan groups, I wanted to know how survey respondents reacted to the actual audit treatment in these new groups. I compared the change from 2020 to 2022B for the control, nonpartisan, and partisan groups. This test revealed that respondents who received the partisan audit treatment experienced a significantly greater drop in confidence relative to the control and nonpartisan groups. This was expected given the results of the original test by treatment groups. Additionally, combining the traditional and RLA treatment groups did not result in a significant finding. The nonpartisan group actually experienced a slightly greater decrease in confidence than the control group, though the difference was not significant. These results indicate that no matter how the traditional and RLA treatments are grouped (separately or into one nonpartisan group), they do not seem to have a significant effect on voter confidence. A TukeyHSD test finds that the partisan group experienced a greater decrease in confidence than the control and nonpartisan groups, and these differences are significant (Table 53 in the Appendix). This suggests that more focus should be placed on the partisan audit treatment, since it is the only treatment that consistently produces a significant effect on confidence.

2020 to 2022B Change in Confidence, Partisan Treatment Separated

audit2	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.0610700	0.0073770
1	-0.0495345	0.0170121	-0.0829181	-0.0161509
2	-0.1211744	0.0261378	-0.1724657	-0.0698832

Table 29.

2020 to 2022B change in confidence, Partisan Treatment Separated

Coefficient	Estimates	std. Error	Statistic	P-Value
Intercept	-0.03604	0.02035	-1.77055	0.077
Non-Partisan Audit Treatment	-0.01024	0.02477	-0.41335	0.679
Partisan Audit Treatment	-0.09674	0.02821	-3.42936	**0.001**
Observations	924			
R^2 / R^2 adjusted	0.017 / 0.015			

Table 30.

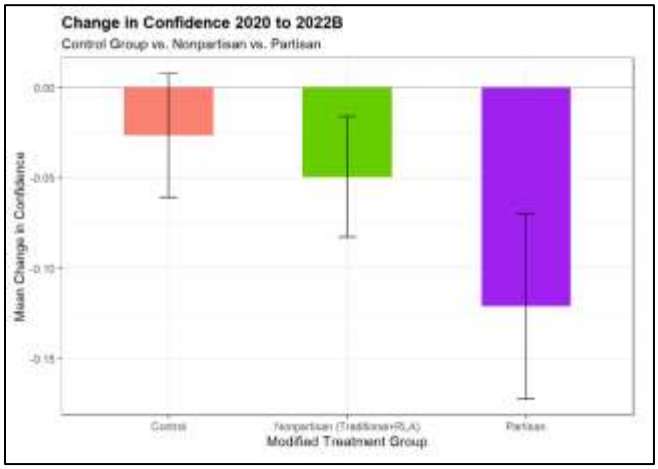

Figure 16.

Party Affiliation as a Predictor of Reaction to Audits

With evidence that audits as a whole do not increase confidence, I turn to partisan differences in confidence. When comparing the control group to the group of respondents that were in any of the treatment groups, testing has revealed that receiving any type of audit vignette does not significantly change confidence, and receiving any type of audit treatment actually significantly decreases confidence at the 90% confidence level. This decrease is primarily due to the notable decrease in confidence caused by the partisan audit treatment. However, there are

other factors to consider that might affect how a respondent reacts to an audit vignette or audit treatment, such as party affiliation.

I measured confidence in 2020 in the pre-treatment question by party, which revealed that Republican respondents had a lower average confidence than Democratic respondents in the survey. This fits the first part of hypothesis 2, and makes sense given the dramatic winner's effect displayed by Republicans after the 2020 election (a Republican did not win the presidency, and thus Republicans were less confident in the election results). I am interested in determining whether party is a good predictor of how much a voter is affected by the audit vignette and information that a post-election audit is being implemented in their state (audit treatment).

To answer this question, I regressed change in confidence on political party, for both the 2020 to 2022A and 2020 to 2022B conditions. The regression for change in confidence for both the audit vignette and audit treatment reveals that Republican respondents experience an increase in confidence in election results from 2020 to 2022A and from 2020 to 2022B. Democrats experienced a significant decrease in confidence in both cases. However, this trend is more indicative of overall trends in confidence by party, rather than being related to the treatment. As can be seen in Table 35, Republicans experienced an overall increase in confidence from 2020 to 2022, and Democrats experienced an overall decrease in confidence from 2020 to 2022. Republicans are still less confident in state-level election results than Democrats, but their confidence has increased since 2020. This trend is most likely a regression to the mean: Republicans were extremely unconfident in election results in 2020, and in response, Democrats were even more confident than normal. Now, it seems both groups are drawing closer to a more moderate level of confidence, though the gap between the parties is still large. Knowing this trend in confidence by party is helpful in contextualizing the changes in confidence caused by

the treatments. Democrats and Republicans will seem to have different reactions to the treatments, but this will be due in part to this underlying trend in party confidence. Thus, it will be important to compare each party in the treatment groups to the same party in the control group, to determine how the treatment changes confidence relative to same-party members in the control.

2020 to 2022A Change in Confidence, by Party

party	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0467921	0.0106975	-0.0677901	-0.0257940
1	0.0291127	0.0152210	-0.0007643	0.0589898

Table 31.

	2020 to 2022A change in confidence by Party			
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.05229	0.00989	-5.28434	**<0.001**
Republican	0.07429	0.01569	4.73441	**<0.001**
Observations	762			
R^2 / R^2 adjusted	0.029 / 0.027			

Table 32.

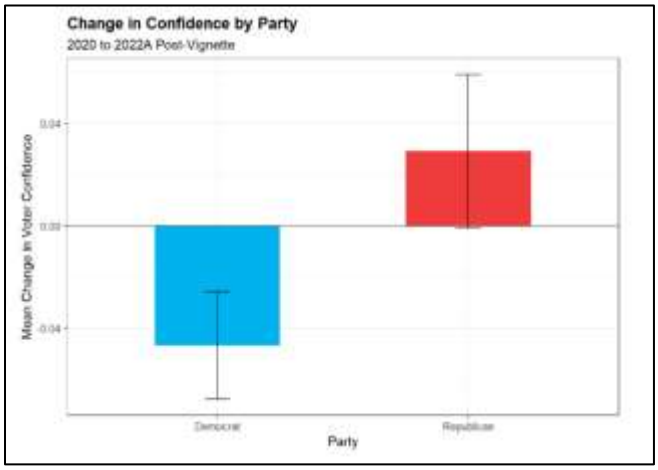

Figure 17.

2020 to 2022B Change in Confidence, by Party

party	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.1147946	0.0164332	-0.1470510	-0.0825381
1	0.0218206	0.0195463	-0.0165465	0.0601877

Table 33.

2020 to 2022B change in confidence by Party				
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.11895	0.01404	-8.46991	**<0.001**
Republican	0.13193	0.02229	5.91871	**<0.001**
Observations	776			
R^2 / R^2 adjusted	0.043 / 0.042			

Table 34.

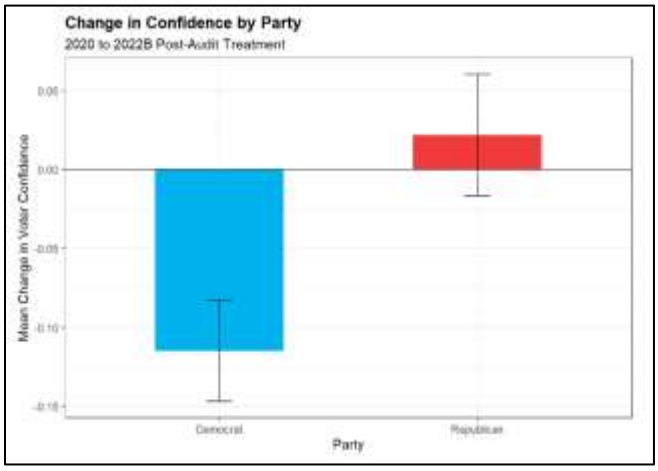

Figure 18.

2020 Average State-Level Confidence by Party	
party	avgconf
0	0.8836879
1	0.5090522

2022 Average State-Level Confidence by Party	
party	avgconf
0	0.8329734
1	0.5297240

Table 35. For party, 0=Democrat and 1=Republican

To further investigate the difference between Democrats and Republicans, I wanted to look at how party affiliation affected average response to the nonpartisan and partisan treatments. For the change in confidence due to the vignette treatment (2022A), I split the control, nonpartisan, and partisan groups up by party. For the vignette treatment, a TukeyHSD test shows that the only significant differences were between party (Table 54 in the Appendix). As already confirmed by the graphs that look at overall party trends, Republicans experienced an increase in

confidence, while Democrats experienced a decrease in confidence, so it is not surprising that the when split by party, individuals in each of the groups are significantly different from those in the opposing party. However, there is no significant responses to the nonpartisan or partisan vignette for either party; both groups had similar changes in confidence compared to their same-party members in the control groups. Again, the audit vignette had little effect.

2020-2022A Confidence by Modified Treament Split by Party

audit4	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.0610700	0.0073770
1	-0.0386964	0.0136225	-0.0654285	-0.0119643
2	0.0269455	0.0197329	-0.0117771	0.0656682
3	-0.0519412	0.0195198	-0.0902457	-0.0136367
4	0.0334495	0.0368911	-0.0389436	0.1058425
NA	0.0030603	0.0205448	-0.0372557	0.0433763

Table 36.

2020-2022A Confidence by Modified Treament Split by Party

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.07207	0.02014	-3.57855	**<0.001**
Republican	0.08041	0.03112	2.58377	**0.010**
Nonpartisan Vignette	0.02687	0.02442	1.10045	0.271
Partisan Vignette	0.02445	0.02842	0.86046	0.390
Republican*Nonpartisan	0.00107	0.03829	0.02804	0.978
Republican*Partisan	-0.02401	0.04430	-0.54204	0.588
Observations	762			
R^2 / R^2 adjusted	0.032 / 0.026			

Table 37.

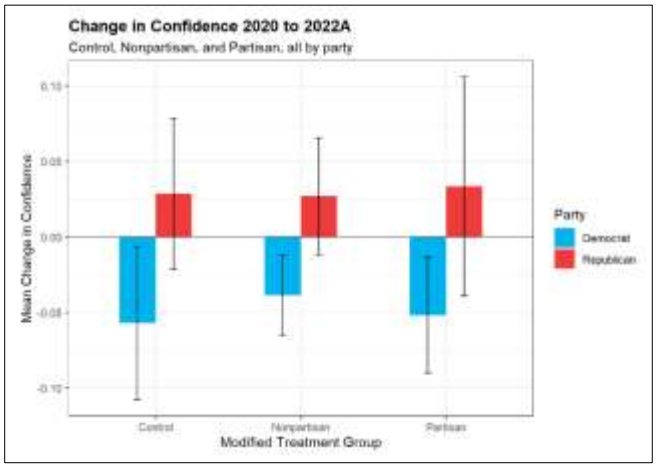

Figure 19.

However, when shifting to look at the audit treatment, there are more significant results. This mirrors what I have found so far, that the audit treatment impacts confidence more than a simple vignette. The regression for 2020-2022B with all groups split by party reveal that Democrats experienced a decrease in confidence when exposed to either audit condition, relative to the control. However, this decrease is only significant for Democrats in the partisan audit group. The largest change in confidence was seen in Democrats who received a partisan audit treatment: their confidence dropped by 14 percentage points compared to the control group. In contrast, Republicans did not have significantly different responses to the nonpartisan or partisan audit treatments relative to Republicans in the control. These results suggest that when Democrats were presented with either audit treatment, they reacted negatively, though only significantly to the partisan audit, whereas when Republicans were exposed to either audit treatment, they did not have any significant reaction. A TukeyHSD test confirms these findings (Table 54 in the Appendix).

2020-2022B Confidence by Modified Treament Split by Party

audit4	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0268465	0.0174401	-0.0610700	0.0073770
1	-0.1005861	0.0224142	-0.1445705	-0.0566018
2	0.0243772	0.0310445	-0.0365427	0.0852972
3	-0.2037692	0.0390182	-0.2803362	-0.1272023
4	0.0113707	0.0388882	-0.0649413	0.0876826
NA	-0.0759668	0.0340122	-0.1427104	-0.0092231

Table 38.

2020-2022B Confidence by Modified Treament Split by Party

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.07207	0.02860	-2.52025	**0.012**
Republican	0.08041	0.04419	1.81966	0.069
Nonpartisan Audit	-0.02198	0.03456	-0.63599	0.525
Partisan Audit	-0.14345	0.04000	-3.58573	**<0.001**
Republican*Nonpartisan	0.04014	0.05413	0.74146	0.459
Republican*Partisan	0.12645	0.06256	2.02127	**0.044**
Observations	776			
R^2 / R^2 adjusted	0.064 / 0.058			

Table 39.

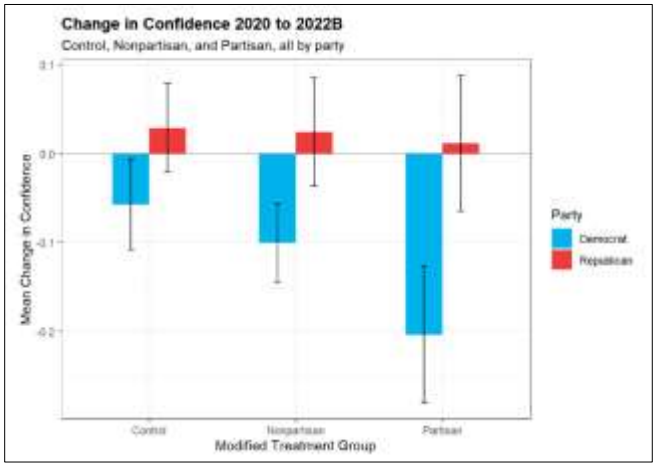

Figure 20.

This is an interesting finding, that the reaction to audit treatments is so different between parties, for both nonpartisan and partisan audits. However, it seems unlikely that Democrats will always react negatively to post-election audits, and that Republicans will always react positively. It seems more likely that their disparate reactions are a function of the messaging following the 2020 election, where Republican leaders called for audits to uncover supposed fraud, while Democratic leaders criticized these calls and proclaimed that the additional audits were a ploy to overturn election results. It makes sense, then, that Democrats would be reluctant to believe that audits would increase the validity of results, and that Republicans might react positively towards an audit.

In 2016, Republicans were more confident than Democrats in the election results, since their candidate won. However, the gap in confidence between parties has grown from 2016 to 2020, as seen in the SPAE data. This change went beyond the normal winner's effect, and can be attributed to Republican messaging that convinced Republican voters that election fraud was a major issue. In order to see a complete switch in how the parties react to post-election audits, there would need to be similar messaging from Democrats in 2022. This messaging would sow

distrust in post-election audits among Republicans, and increase trust in post-election audits among Democrats. Clearly, party messaging played a part in confidence in 2020, and will continue to play a role. However, without the ability to predict how messaging will evolve in the next election, it is most helpful to focus on how winners and losers of election might react to post-election audits.

Winner as a Predictor of Reaction to Audits

The observed trend could easily change in the next election cycle, if Republicans win and Democrats that are less confident in those election results call for an audit. It seems unlikely that there is some intrinsic quality among Democrats that makes them consistently distrust post-election audits more than Republicans. If reactions to post-election audits depend more on which party won the last election, this leads to another test of how confidence changes in reaction to whether a voter's preferred candidate won or lost in their state. In this new test, I recorded whether a voter's preferred candidate won in their state, and if this was true, I recorded the respondent as a 1. Similarly, if their preferred candidate lost in their state, I recorded a 0 for "loser". This condition is separate from party, since not every Democrat was a winner in their own state, even though Democrats won the election overall. Similarly, not every Republican in the dataset was automatically a loser, since some respondents live in states where Trump won the state.

First, I separated the dataset by whether respondents fell into the winner or loser category, and compared their change in confidence for 2020 to 2022. For the vignette treatment, there was no significant difference in change in confidence between winners and losers (see TukeyHSD test in Appendix Table 55). However, for the audit treatment (2022B), winners experienced a significantly larger decrease in confidence when exposed to an audit treatment,

compared to the losers in the data, and when compared to winners in the control group (see TukeyHSD test in Appendix Table 55).

2020 to 2022A Change in Confidence, Control vs Received Vignette

audit	winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	0	-0.0471888	0.0333275	-0.1126068	0.0182292
0	1	-0.0118009	0.0228026	-0.0565598	0.0329579
1	0	-0.0107364	0.0148876	-0.0399590	0.0184863
1	1	-0.0183047	0.0136374	-0.0450734	0.0084639

Table 40.

	2020 to 2022A change in confidence by Winner			
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.06911	0.02370	-2.91531	**0.004**
Winner	0.05382	0.03138	1.71503	0.087
Received Vignette	0.06033	0.02711	2.22527	**0.026**
Winner*Received Vignette	-0.07018	0.03618	-1.93982	0.053
Observations	762			
R^2 / R^2 adjusted	0.007 / 0.003			

Table 41.

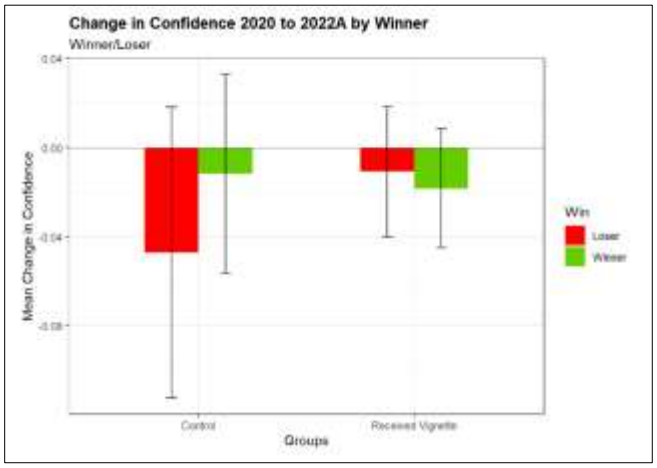

Figure 21.

2020 to 2022B Change in Confidence, Control vs. Received Treatment

audit	winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	0	-0.0471888	0.0333275	-0.1126068	0.0182292
0	1	-0.0118009	0.0228026	-0.0565598	0.0329579
1	0	-0.0252310	0.0230786	-0.0705316	0.0200696
1	1	-0.1172826	0.0216554	-0.1597897	-0.0747754

Table 42.

	2020 to 2022B change in confidence by Winner			
Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.06911	0.03386	-2.04116	**0.042**
Winner	0.05382	0.04482	1.20079	0.230
Received Treatment	0.05300	0.03867	1.37036	0.171
Winner*Received Treatment	-0.16429	0.05153	-3.18819	**0.001**
Observations	776			
R^2 / R^2 adjusted	0.028 / 0.024			

Table 43.

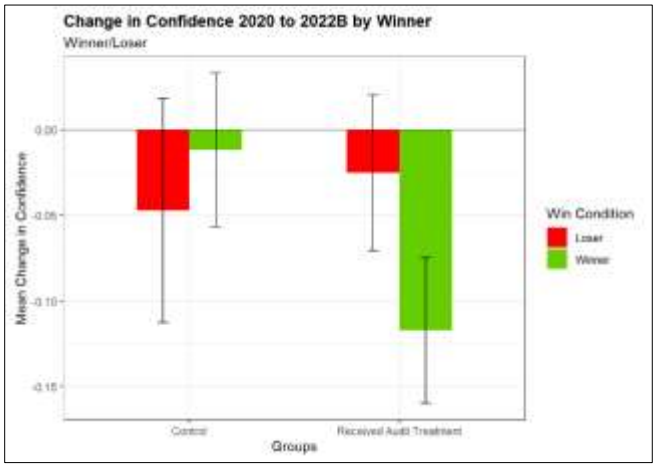

Figure 22.

Again, this indicates a greater effect of the audit treatment compared to the vignette. It also reveals that winners react negatively to the idea that an audit would be required in their state. To further understand if there is a difference in winner/loser reactions based on type of audit, I again did an analysis based on the control, nonpartisan, and partisan groups.

For the vignette treatment, there were no significant differences. Though two estimates from the regression are statistically significant, a TukeyHSD test reveals no significant differences between each group (see Table 56 in the Appendix).

2020 to 2022A Change in Confidence, Modified Treatment Groups

audit2	winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	0	-0.0471888	0.0333275	-0.1126068	0.0182292
0	1	-0.0118009	0.0228026	-0.0565598	0.0329579
1	0	0.0023824	0.0177688	-0.0324958	0.0372606
1	1	-0.0290728	0.0144634	-0.0574627	-0.0006828
2	0	-0.0390437	0.0268337	-0.0917153	0.0136279
2	1	0.0005045	0.0274963	-0.0534675	0.0544765

Table 44.

2020 to 2022A change in confidence by Winner and Audit Type

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.06911	0.02370	-2.91582	**0.004**
Winner	0.05382	0.03137	1.71533	0.087
Nonpartisan	0.07275	0.02852	2.55079	**0.011**
Partisan	0.03296	0.03342	0.98638	0.324
Winner*Nonpartisan	-0.08746	0.03829	-2.28399	**0.023**
Winner*Partisan	-0.03354	0.04447	-0.75424	0.451
Observations	762			
R^2 / R^2 adjusted	0.010 / 0.003			

Table 45.

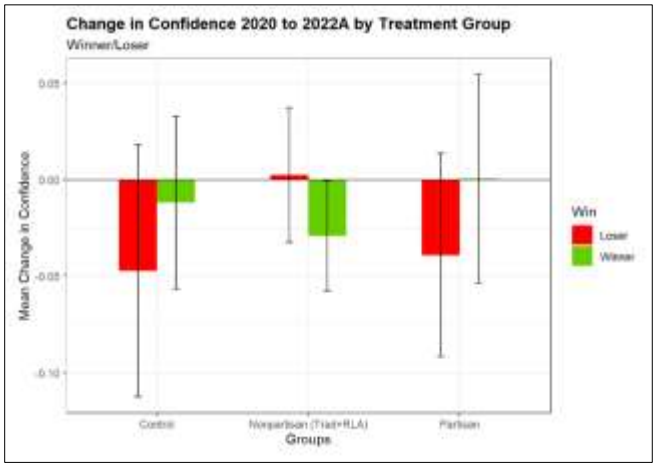

Figure 23.

For the audit treatment, the results were clearer. The losers across both groups did not experience a significant change in confidence relative to the control. However, winners the partisan treatment group experienced a significant decrease in confidence relative to winners in the control. This indicates that when winners are told to imagine that a partisan post-election audit is to be required in their state, they experience a decrease in confidence. The winners in the

nonpartisan group also experienced a decrease in confidence relative to winners in the control, but this difference was not significant. This seems logical: winners feel less confident in the fairness and usefulness of an audit if the losing party is involved in the auditing process. These results are interesting, and indicate the possibility that moving forward, winners of elections (whether it be Republicans or Democrats) will react negatively to post-election audits.

2020 to 2022B Change in Confidence, Modified Treatment Groups

audit2	winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	0	-0.0471888	0.0333275	-0.1126068	0.0182292
0	1	-0.0118009	0.0228026	-0.0565598	0.0329579
1	0	-0.0065522	0.0279370	-0.0613894	0.0482849
1	1	-0.0962398	0.0242821	-0.1439028	-0.0485768
2	0	-0.0659373	0.0407557	-0.1459361	0.0140615
2	1	-0.1544372	0.0415412	-0.2359778	-0.0728965

Table 46.

2020 to 2022B change in confidence by Winner and Audit Type

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.06911	0.03370	-2.05065	**0.041**
Winner	0.05382	0.04461	1.20637	0.228
Nonpartisan	0.07811	0.04048	1.92949	0.054
Partisan	-0.00232	0.04737	-0.04903	0.961
Winner*Nonpartisan	-0.16105	0.05425	-2.96864	**0.003**
Winner*Partisan	-0.16281	0.06287	-2.58961	**0.010**
Observations	776			
R^2 / R^2 adjusted	0.040 / 0.033			

Table 47.

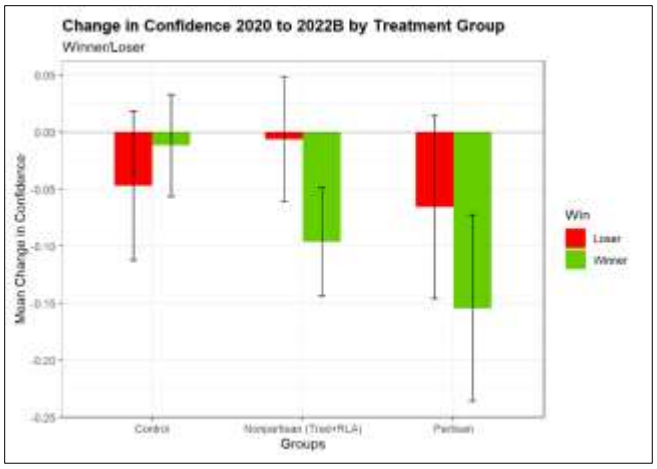

Figure 24.

Given the clear polarizing effect of the partisan audit treatment, my final test was to compare the average change in confidence between winners and losers that received just the partisan treatment. For the vignette, winners and losers were not significantly different. For the partisan audit treatment, winners experienced a significant (10 percentage point) drop in confidence compared to losers.

2020 to 2022A Change in Confidence,Partisan Only

winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0390437	0.0268856	-0.0920659	0.0139785
1	0.0005045	0.0275494	-0.0538267	0.0548358

Table 48.

2020 to 2022A change in confidence by Winner, Only Partisan Audit

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.03614	0.02192	-1.64861	0.101
Winner	0.02027	0.02934	0.69100	0.490
Observations	188			
R^2 / R^2 adjusted	0.003 / -0.003			

Table 49.

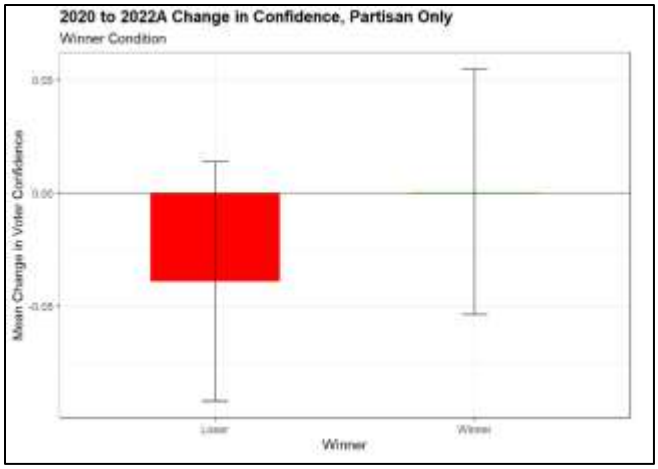

Figure 25.

2020 to 2022B Change in Confidence,Partisan Only

winner	meanchange	meanchange_se	meanchange_low	meanchange_upp
0	-0.0659373	0.0408344	-0.1464686	0.0145940
1	-0.1544372	0.0416214	-0.2365205	-0.0723538

Table 50.

2020 to 2022B change in confidence by Winner, Only Partisan Audit

Coefficient	*Estimates*	*std. Error*	*Statistic*	*P-Value*
Intercept	-0.07143	0.03825	-1.86765	0.063
Winner	-0.10900	0.05089	-2.14182	**0.033**
Observations	193			
R^2 / R^2 adjusted	0.023 / 0.018			

Table 51.

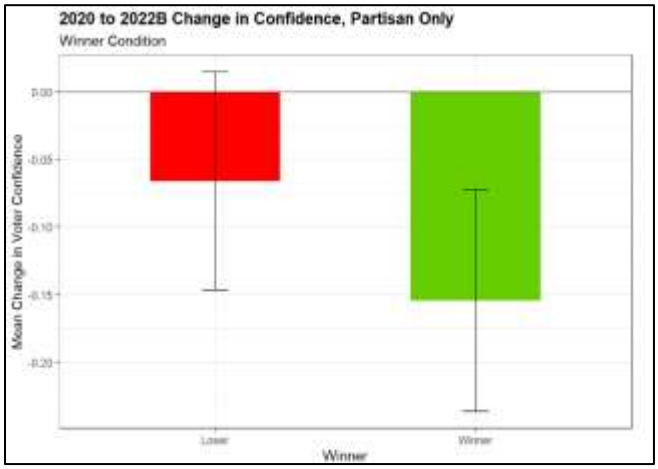

Figure 26.

Discussion

My analysis of the SPAE 2016 and 2020 data reveals a few things. First, there is not a definitive difference in average voter confidence between states with and without post-election audit requirements. If anything, states without audit requirements are on average more confident, but this result may have little to do with such requirements and more dependent on other factors that this preliminary analysis could not control for. Controlling for state electoral competitiveness helped confirm that audit requirements do not have a positive effect on voter confidence relative to states without audit requirements.

Additionally, there is evidence that voter's views on the accuracy of election results is becoming more polarized, when comparing 2016 and 2020 data. Furthermore, there is evidence that voters (at least Republicans) are increasingly responsive to elite messages about fraud and to the national election results, and less responsive to state election results. These concerning trends in public confidence in elections emphasize the importance of understanding the value (or lack thereof) of post-election audits as a tool to affect voter confidence.

The results of the CES experiment help uncover a clearer relationship (or lack thereof) between audits and voter confidence. First, Hypotheses 1, 3, and 4 were not supported by the data. In contradiction to Hypothesis 1, none of the audit types successfully increased voter confidence when considering voters overall. Additionally, there was no distinction between traditional and RLA treatments, rendering Hypothesis 3 incorrect. And finally, though traditional audits are more beneficial towards voter confidence than a partisan audit (which can actually depress confidence), traditional audits do not have a significant effect compared to the control. Thus, Hypothesis 4 was also unsupported. Hypothesis 2 was similarly unsupported. Republicans were found to have a lower baseline confidence in the 2020 election results, as hypothesized.

However, Republicans experienced no significant increase in confidence when presented with an audit treatment. Contrary to Hypothesis 2, Democrats experienced a large negative change in confidence when presented with an audit treatment, particularly in response to the partisan treatment, rather than remaining unchanged as previously hypothesized.

The results of this experiment suggest that when not split by other demographic factors, voters experience very little change in confidence when presented with general information about any type of audit (the vignette). Voters who received a vignette experienced a slight increase in confidence relative to the control group, but the change was not significant. However, when respondents were told to specifically imagine that a post-election audit would be held in their state in the next election, they experienced a significant decrease in confidence. This suggests that voters who are made aware of the vague existence of post-election audits may feel slightly more confident in election results, knowing that these procedures exist somewhere. However, when voters are specifically told that a post-election audit could be required *in their state*, their confidence falters. Voters mildly approve of the *idea* of post-election audits, bordering on apathy, but in reality, feel that audits could be indicative of some issue in their state's elections if the audit is specifically implemented in their state.

The original hypotheses expected large differences in the effect of different audit types. This was not true when comparing traditional and risk-limiting audits. Neither were successful in increasing confidence, nor were their effects on confidence significantly different from each other. These results suggest that audit procedures do not make a significant difference when it comes to voter confidence. This is an interesting finding, as it indicates that voters are either not able to determine what factors make up the most helpful type of audit, or they do not care about the existence of audits, as long as those audits do not involve partisan actors.

Party was a significant predictor of response to audits in this experiment. Democrats responded negatively to both nonpartisan and partisan audits, but were especially discomforted by the idea of partisan audits. Republicans did not experience significant changes in confidence when presented with either type of audit.

Being a winner (the voter's preferred candidate won in their state) was also a significant predictor of response to audit treatments. Overall, winners felt less confident in election results when they were presented with an audit treatment, especially in the case of the partisan audit treatment.

These findings suggest that the theory of audits as a signal of integrity does not hold. Though other signals of integrity (such as observing competent poll workers or having a positive voting-day experience) might increase voter confidence, this is not the case for post-election audits. Instead of serving as a check of the vote tabulation system that could increase voters' faith in the integrity of an election, voters now view audits as a tool to overturn election results. The SPAE data analysis supports the idea that post-election audit laws may have little positive effect on confidence. Specifically negative reactions to post-election audits are more evident in the CES data analysis, especially when analyzing how Democrats, or those who won in their state in the last election, reacted to the audit treatments. These results are reminiscent of reactions to the Arizona audit following the 2020 election. Partisan actors (Republicans) called for an audit, claiming that this would assure that the correct results were uncovered. Democrats were horrified by this action, viewing it as an undemocratic challenge to state election results that had already been certified, and feared that the audit was a way for Republicans to overturn the state's election results. Those fears were further validated after the January 6th insurrection, when Republican supporters of Trump attempted to stop the final certification of the presidential

results. Given the results of my analysis, that show an increasing receptiveness to elite messaging (SPAE data) and negative reactions to audits among winners and Democrats (CES data), it seems that audits have become a point of partisan disagreement and distrust, rather than a nonpartisan signal of integrity.

Conclusion

In the wake of an election fraught with conflict and doubts, it is essential to seek out solutions that will preserve and restore faith in our democracy. The data shows that there has been a significant decrease in confidence in election results among Republicans, due to a combination of the winner's effect and elite messaging that suggested the existence of widespread fraud following the 2020 election. This crisis of confidence has bled over to Democrats, who now report feeling less confident in the results of the upcoming 2022 election. Such a trend is not healthy for democracy, and begs for a solution.

Despite calls from Republicans in favor of audits post-election, and support from Democrats in favor of legally improving post-election audit procedures, post-election audits do not seem to be the solution. Both parties have expressed interest in audits as a useful tool, but the results of my study indicate that it is not a tool to assuage voter fears and convince the public of the integrity of our elections. Instead, Democrats (and more broadly, those whose preferred candidate won in their state in 2020) are wary of post-election audits, seeing them as an opportunity for believers in election fraud to cast doubt on, or even overturn, election results. This is especially prominent when considering partisan audits. Democrats (and more broadly, those whose preferred candidate won in their state in 2020) react particularly negatively to partisan audits, where partisan actors whose party lost in the state would be involved in the conducting of an audit. This reaction highlights how damaging the partisan post-election audit

was in Arizona. Though it is not clear if the negative reaction to a partisan audit in this study is a reaction to the Arizona audit or a natural reaction of distrust in the losing party, it seems likely that the Arizona audit will stay in the minds of many (especially Democratic) voters, souring them on the idea of post-election audits.

As previously established, "loser's consent" is a crucial facet of our democracy. The results of this study suggest a concerning trend in relation to this idea. Losers of the 2020 election cast doubts on the validity of the election, which in itself was harmful to the confidence of many voters. This study indicates that post-election audits were not helpful in increasing the confidence of election losers. If post-election audits are not a tool that can help increase faith in election results after they are called into question, it seems less likely that loser's consent will be given easily in future elections. Additionally, there is now the worrying angle that Democrats (winners of the last election) react negatively to post-election audits. What should be a nonpartisan tool to assure voters of the integrity of elections is now hardly a comfort even to losing voters, and a possible detriment to confidence among winning voters.

There is the slight, yet intriguing, difference between audit vignettes and an actual audit treatment. Though the audit vignettes did not produce significantly positive responses among respondents to the survey, they did elicit more positive responses than the actual audit treatments. This could mean that voters have no opinion on audits when they do not apply specifically to their state. Or, the slight increase in confidence seen among vignette recipients could mean that voters still have some positive reactions to the *idea* of an audit, but begin to worry about the implications of an audit when it is specific to their state (given the negative reactions to the audit treatments).

Many questions remain. One question is whether improved civic education about post-election audits could increase voter confidence and outweigh worries that surface when voters learn that an audit is required in their state. This seems unlikely given the major partisan factors at play post-2020, but it is an interesting question nonetheless. Second, if a similar survey experiment were to be done following the 2022 election, would the trend switch if Democrats lose the election? My findings suggest that this would be the case, but without being able to predict the messaging that will result from the 2022 election, this prediction is limited. Finally, considering the particularly negative response to the partisan audit treatment in the CES experiment, would it be beneficial to publicize the fact that most post-election audits occur without the direct involvement of partisan actors?

Further research is needed to determine the answers to these questions. For the moment, it seems that post-election audits are not the required solution to shore up our democracy. Voters need a restored faith in U.S. democracy, but how this is to happen is unclear.

Appendix

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = a22change_lm)

$EMY438_441_treat
           diff         lwr        upr     p adj
2-1  0.026690242 -0.02484817 0.07822865 0.5421222
3-1  0.023105002 -0.02740514 0.07361514 0.6413300
4-1  0.014391014 -0.03617256 0.06495459 0.8840098
3-2 -0.003585240 -0.05457556 0.04740508 0.9978954
4-2 -0.012299227 -0.06334247 0.03874402 0.9256328
4-3 -0.008713987 -0.05871878 0.04129081 0.9699089
```

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = b22change_lm)

$EMY438_441_treat
           diff         lwr         upr     p adj
2-1  0.006006006 -0.06806598  0.0800779963 0.9967860
3-1 -0.025330770 -0.09807366  0.0474121162 0.8068089
4-1 -0.096744047 -0.16934143 -0.0241466597 0.0035242
3-2 -0.031336776 -0.10407966  0.0414061102 0.6842417
4-2 -0.102750053 -0.17534744 -0.0301526657 0.0016198
4-3 -0.071413277 -0.14265405 -0.0001724993 0.0491833
```

Table 52. TukeyHSD tests for change in confidence by treatment group, A and B.

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = part22a_lm)

$audit2
           diff         lwr        upr     p adj
1-0  0.02482527 -0.01545766 0.06510820 0.3174080
2-0  0.01439101 -0.03170287 0.06048490 0.7439737
2-1 -0.01043426 -0.05018980 0.02932128 0.8113191
```

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = part22b_lm)

$audit2
           diff         lwr         upr     p adj
1-0 -0.01024018 -0.06839632  0.04791597 0.9101413
2-0 -0.09674405 -0.16296840 -0.03051970 0.0018269
2-1 -0.08650387 -0.14309154 -0.02991620 0.0010194
```

Table 53. TukeyHSD tests for change in confidence by modified treatment groups, A and B.

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = lmbluhA)

$party
         diff       lwr       upr   p adj
1-0 0.07428978 0.04345685 0.1051227 2.7e-06

$audit2
           diff         lwr        upr     p adj
1-0  0.02707209 -0.01706674 0.07121092 0.3207287
2-0  0.01465582 -0.03653652 0.06584816 0.7796761
2-1 -0.01241627 -0.05678947 0.03195692 0.7883915

$`party:audit2`
                 diff          lwr         upr     p adj
1:0-0:0  0.0804054054 -0.008504033  0.16931484 0.1024815
0:1-0:0  0.0268743320 -0.042898269  0.09664693 0.8812160
1:1-0:0  0.1083532512  0.032122998  0.18458350 0.0007641
0:2-0:0  0.0244530245 -0.056740164  0.10564621 0.9556464
1:2-0:0  0.0808440019 -0.009414929  0.17110293 0.1088589
0:1-1:0 -0.0535310734 -0.131960712  0.02489857 0.3724746
1:1-1:0  0.0279478458 -0.056278301  0.11217399 0.9337549
0:2-1:0 -0.0559523810 -0.144695416  0.03279065 0.4654358
1:2-1:0  0.0004385965 -0.096667876  0.09754507 1.0000000
1:1-0:1  0.0814789193  0.017781420  0.14517642 0.0037320
0:2-0:1 -0.0024213075 -0.071981740  0.06713913 0.9999986
1:2-0:1  0.0539696699 -0.025986534  0.13392587 0.3854488
0:2-1:1 -0.0839002268 -0.159936333 -0.00786412 0.0207911
1:2-1:1 -0.0275092493 -0.113158710  0.05814021 0.9420127
1:2-0:2  0.0563909774 -0.033704042  0.14648600 0.4739686
```

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = lmbluhC)

$party
         diff       lwr       upr p adj
1-0 0.1319329 0.08853694 0.1753288     0

$audit2
           diff         lwr         upr     p adj
1-0 -0.004785871 -0.06721742  0.05764568 0.9822948
2-0 -0.091970084 -0.16418050 -0.01975967 0.0080698
2-1 -0.087184213 -0.14939788 -0.02497054 0.0029972

$`party:audit2`
                 diff          lwr          upr     p adj
1:0-0:0  0.08040541 -0.045833081  0.206643892 0.4535980
0:1-0:0 -0.02198049 -0.120718162  0.076757189 0.9882846
1:1-0:0  0.09856214 -0.009055204  0.206179480 0.0944764
0:2-0:0 -0.14344517 -0.257734061 -0.029156277 0.0047956
1:2-0:0  0.06341406 -0.064245587  0.191073714 0.7153965
0:1-1:0 -0.10238589 -0.213451751  0.008679967 0.0905066
1:1-1:0  0.01815673 -0.100872628  0.137186094 0.9980098
0:2-1:0 -0.22385057 -0.348944329 -0.098756821 0.0000060
1:2-1:0 -0.01699134 -0.154408527  0.120425843 0.9992780
1:1-0:1  0.12054263  0.031206396  0.209878854 0.0017421
0:2-0:1 -0.12146468 -0.218734516 -0.024194850 0.0051214
1:2-0:1  0.08539455 -0.027284001  0.198073101 0.2554363
0:2-1:1 -0.24200731 -0.348279525 -0.135735091 0.0000000
1:2-1:1 -0.03514807 -0.155683628  0.085387478 0.9613311
1:2-0:2  0.20685923  0.080331456  0.333387009 0.0000519
```

Table 54. TukeyHSD tests for change in confidence by modified treatment groups and party, A and B.

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = winner22a_lm)

$winner
           diff         lwr        upr     p adj
1-0 0.0004442223 -0.03020117 0.03108962 0.9773058

$audit
          diff       lwr        upr     p adj
1-0 0.02089751 -0.014325 0.05612001 0.2445044

$`winner:audit`
                diff          lwr        upr     p adj
1:0-0:0  0.053815171 -0.026976229 0.13460657 0.3164868
0:1-0:0  0.060333761 -0.009475092 0.13014261 0.1173328
1:1-0:0  0.043969079 -0.024780060 0.11271822 0.3530536
0:1-1:0  0.006518590 -0.056335015 0.06937220 0.9933353
1:1-1:0 -0.009846092 -0.071520591 0.05182841 0.9765591
1:1-0:1 -0.016364682 -0.062730289 0.03000092 0.8001932
```

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = winner22b_lm)

$winner
           diff         lwr         upr     p adj
1-0 -0.06954919 -0.1129557 -0.02614265 0.0017226

$audit
           diff         lwr         upr     p adj
1-0 -0.03951098 -0.08966532 0.01064335 0.1224032

$`winner:audit`
                diff          lwr         upr     p adj
1:0-0:0  0.053815171 -0.06157133  0.16920167 0.6265196
0:1-0:0  0.052996645 -0.04657347  0.15256676 0.5183888
1:1-0:0 -0.057476587 -0.15530152  0.04034835 0.4303030
0:1-1:0 -0.000818526 -0.09044060  0.08880355 0.9999953
1:1-1:0 -0.111291759 -0.19897088 -0.02361264 0.0062092
1:1-0:1 -0.110473233 -0.17595445 -0.04499201 0.0000934
```

Table 55. TukeyHSD tests for change in confidence by winner and audit, A and B.

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = winner22a_treatlm)

$winner
           diff         lwr        upr     p adj
1-0 0.0004442223 -0.03019603 0.03108447 0.9773019

$audit2
           diff         lwr         upr     p adj
1-0  0.02449080 -0.02015292 0.06913453 0.4022234
2-0  0.01357713 -0.03820079 0.06535504 0.8115343
2-1 -0.01091368 -0.05579444 0.03396709 0.8355893

$`winner:audit2`
                diff          lwr        upr     p adj
1:0-0:0  0.053815171 -0.035819031 0.14344937 0.5219825
0:1-0:0  0.072748678 -0.008734453 0.15423181 0.1110491
1:1-0:0  0.039105691 -0.041298720 0.11951010 0.7333963
0:2-0:0  0.032961113 -0.062510277 0.12843250 0.9222918
1:2-0:0  0.053232675 -0.037131539 0.14359689 0.5434549
0:1-1:0  0.018933507 -0.055253846 0.09312086 0.9783346
1:1-1:0 -0.014709480 -0.087710384 0.05829142 0.9925913
0:2-1:0 -0.020854058 -0.110179581 0.06847146 0.9854564
1:2-1:0 -0.000582496 -0.084427316 0.08326232 1.0000000
1:1-0:1 -0.033642987 -0.096367326 0.02908135 0.6433677
0:2-0:1 -0.039787566 -0.120931017 0.04135589 0.7265387
1:2-0:1 -0.019516003 -0.094583735 0.05555173 0.9764892
0:2-1:1 -0.006144578 -0.086204732 0.07391558 0.9999306
1:2-1:1  0.014126984 -0.059768435 0.08802240 0.9942002
1:2-0:2  0.020271562 -0.069786474 0.11032960 0.9876748
```

```
  Tukey multiple comparisons of means
    95% family-wise confidence level

Fit: aov(formula = winner22b_treatlm)

$winner
           diff       lwr         upr     p adj
1-0 -0.06954919 -0.112755 -0.02634334 0.0016396

$audit2
           diff         lwr         upr     p adj
1-0 -0.01218878 -0.07542228  0.05104473 0.8932448
2-0 -0.09500479 -0.16814278 -0.02186681 0.0066764
2-1 -0.08281602 -0.14582884 -0.01980319 0.0059448

$`winner:audit2`
                diff         lwr         upr     p adj
1:0-0:0  0.05381517 -0.07362937  0.18125971 0.8338251
0:1-0:0  0.07811470 -0.03754646  0.19377586 0.3848206
1:1-0:0 -0.02912297 -0.14288087  0.08463492 0.9780396
0:2-0:0 -0.00232288 -0.13766476  0.13301900 1.0000000
1:2-0:0 -0.11132244 -0.23876698  0.01612209 0.1266239
0:1-1:0  0.02429953 -0.08096917  0.12956823 0.9861862
1:1-1:0 -0.08293814 -0.18611204  0.02023575 0.1966123
0:2-1:0 -0.05613805 -0.18271379  0.07043769 0.8029113
1:2-1:0 -0.16513761 -0.28323124 -0.04704399 0.0009983
1:1-0:1 -0.10723767 -0.19544339 -0.01903196 0.0071557
0:2-0:1 -0.08043758 -0.19514073  0.03426557 0.3411978
1:2-0:1 -0.18943714 -0.29470585 -0.08416844 0.0000051
0:2-1:1  0.02680009 -0.08598362  0.13958381 0.9842541
1:2-1:1 -0.08219947 -0.18537337  0.02097443 0.2051002
1:2-0:2 -0.10899956 -0.23557530  0.01757618 0.1374275
```

Table 56. TukeyHSD tests for change in confidence by modified treatment groups and winner, A and B.

Works Cited

Alvarez, R. Michael, et al. “Are Americans Confident Their Ballots Are Counted?” *The Journal of Politics*, vol. 70, no. 3, July 2008, pp. 754–66. *DOI.org (Crossref)*, https://doi.org/10.1017/S0022381608080730.

“Analysis | The Lie That Lingers: 3 in 10 Americans Falsely Believe the Election Was Riddled with Fraud.” *Washington Post*. *www.washingtonpost.com*, https://www.washingtonpost.com/politics/2021/01/19/lie-that-lingers-3-in-10-americans-falsely-believe-that-election-was-riddled-with-fraud/. Accessed 28 Oct. 2021.

Anderson, C., Blais, A., Bowler, S., Donovan, T., Listhaug, O., 2005. Losers' Consent: Elections and Democratic Legitimacy. Oxford University Press.

“Ballotpedia’s 2020 Election Help Desk: Tracking Election Disputes, Lawsuits, and Recounts.” *Ballotpedia*, https://ballotpedia.org/Ballotpedia%27s_2020_Election_Help_Desk:_Tracking_election_disputes,_lawsuits,_and_recounts. Accessed 28 Oct. 2021.

Berlinski, Nicolas et al. 2021. “The Effects of Unsubstantiated Claims of Voter Fraud on Confidence in Elections.” *Journal of Experimental Political Science*: 1–16.

Blais, Andre, and Christopher Anderson. 2005. Elections and Democratic Legitimacy. OUP Oxford. https://www.google.com/books/edition/Losers_Consent/mhBREAAAQBAJ?hl=en&gbpv=0.

Blais, Andre, Elisabeth Gidengil, and Neil Nevitte. “Where Does Turnout Decline Come From?” *European Journal of Political Research* 43(2): 221–36.

Bowler, Shaun, Thomas Brunell, Todd Donovan, and Paul Gronke. 2015. “Election Administration and Perceptions of Fair Elections.” *ElSevier Electoral Studies* 38: 1–9.

Brancati, Dawn. 2014. “Building Confidence in Elections: The Case of Electoral Monitors in Kosova.” *Journal of Experimental Political Science*: 6–15.

Claassen, Ryan L., et al. “Voter Confidence and the Election-Day Voting Experience.” *Political Behavior*, vol. 35, no. 2, June 2013, pp. 215–35. *DOI.org (Crossref)*, https://doi.org/10.1007/s11109-012-9202-4.

Carlin, R.E., Love, G.J. The Politics of Interpersonal Trust and Reciprocity: An Experimental Approach. Polit Behav 35, 43–63 (2013). https://doi.org/10.1007/s11109-011-9181-x

Editor-at-large, C. C. (2020, November 9). Analysis: The 10 closest states in the 2020 presidential election. CNN. https://www.cnn.com/2020/11/09/politics/2020-election-trump-biden-closest-states/index.html

Farley, Robert. “Trump’s Shaky Warning About Counterfeit Mail-In Ballots.” *FactCheck.Org*, June 25, 2020. https://www.factcheck.org/2020/06/trumps-shaky-warning-about-counterfeit-mail-in-ballots/.

"Georgia Again Certifies Election Results Showing Biden Won." *AP NEWS*, 20 Apr. 2021, https://apnews.com/article/election-2020-joe-biden-donald-trump-georgia-elections-4eeea3b24f10de886bcdeab6c26b680a.

"GOP Review Finds No Proof Arizona Election Stolen from Trump." *AP NEWS*, 24 Sept. 2021, https://apnews.com/article/donald-trump-elections-arizona-phoenix-conspiracy-theories-d38321441bcd6cea58421f6871b4f74e.

Hall, Thad E., et al. "The Human Dimension of Elections: How Poll Workers Shape Public Confidence in Elections." *Political Research Quarterly*, vol. 62, no. 3, Sept. 2009, pp. 507–22. *DOI.org (Crossref)*, https://doi.org/10.1177/1065912908324870.

Klobuchar, Amy. "S.2747 - Freedom to Vote Act." *Congress.Gov*, https://www.congress.gov/bill/117th-congress/senate-bill/2747/text. Accessed 27 Oct. 2021.

Levy, Morris. Winning cures everything? Beliefs about voter fraud, voter confidence, and the 2016 election, Electoral Studies, Volume 74, 2021, 102156, ISSN 0261-3794, https://doi.org/10.1016/j.electstud.2020.102156.

Lindeman, Mark, and Philip B. Stark. "A Gentle Introduction to Risk-Limiting Audits." *IEEE Security & Privacy*, vol. 10, no. 5, Sept. 2012, pp. 42–49. *DOI.org (Crossref)*, https://doi.org/10.1109/MSP.2012.56.

Sances, Michael W., and Charles Stewart. "Partisanship and Confidence in the Vote Count: Evidence from U.S. National Elections since 2000." *Electoral Studies*, vol. 40, Dec. 2015, pp. 176–88. *DOI.org (Crossref)*, https://doi.org/10.1016/j.electstud.2015.08.004.

Sances, M. W., & Stewart, C. (2015). Partisanship and confidence in the vote count: Evidence from U.S. national elections since 2000. Electoral Studies, 40, 176-188. https://doi.org/10.1016/j.electstud.2015.08.004

Shenker, Jacob, and R. Michael Alvarez. "Mitigating Coercion, Maximizing Confidence in Postal Elections." *USENIX Journal of Election Technology and Systems*, vol. 2, no. 3, July 2014.

Sinclair, B., Smith, S. S., & Tucker, P. D. (2018). "It's Largely a Rigged System": Voter Confidence and the Winner Effect in 2016. Political Research Quarterly, 71(4), 854–868. https://doi.org/10.1177/1065912918768006

Stark, P. B., and D. A. Wagner. "Evidence-Based Elections." *IEEE SECURITY AND PRIVACY*, no. SPECIAL ISSUE ON ELECTRONIC VOTING, 2012.

Stark, Philip, and Vanessa Teague. "Verifiable European Elections: Risk-Limiting Audits for D'Hondt and Its Relatives." *USENIX Journal of Election Technology and Systems*, vol. 3, Dec. 2014.

Stewart, Charles. 2017. "2016 Survey of the Performance of American Elections." https://doi.org/10.7910/DVN/Y38VIQ.

Stewart, Charles. 2021. "2020 Survey of the Performance of American Elections." https://doi.org/10.7910/DVN/FSGX7Z.

The Freedom to Vote Act | Brennan Center for Justice. https://www.brennancenter.org/our-work/research-reports/freedom-vote-act. Accessed 28 Oct. 2021.

"Voters' Evaluations of the 2020 Election Process." Pew Research Center. https://www.pewresearch.org/politics/2020/11/20/voters-evaluations-of-the-2020-election-process/.

"Voter Fraud Map: Election Fraud Database." *The Heritage Foundation*, https://www.heritage.org/voterfraud. Accessed 28 Oct. 2021.

Voting Laws Roundup: October 2021 | Brennan Center for Justice. https://www.brennancenter.org/our-work/research-reports/voting-laws-roundup-october-2021. Accessed 28 Oct. 2021.

Voter Confidence. 2021. MIT. Explainer. https://electionlab.mit.edu/research/voter-confidence.

Wolf, Zachary. "The 5 Key Elements of Trump's Big Lie and How It Came to Be." *CNN*, May 19, 2021. https://www.cnn.com/2021/05/19/politics/donald-trump-big-lie-explainer/index.html.