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County Election Administration Promotes Voter Confidence in US Elections for Election Losers

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Abstract

Does high-quality county election administration (CEA)—the center of US elections—add to public confidence in US elections, including among election losers? No study has examined how CEA quality throughout the US and over time affects this outcome. Specifically, this study evaluates the hypotheses that, from 2012 to 2022, higher quality CEA leads to higher public confidence in election results and enhances this confidence among election losers. These hypotheses are evaluated using the new CEA (Ritter & Tolbert, 2024) index. Using the Survey of the Performance of American Elections data (from 2012 to 2022), coupled with multi-level modeling, this study evaluates the impact of CEA on public confidence for election winners and losers. Ultimately, this study finds that higher quality CEA helps close the confidence gap between election losers and winners.

Keywords

American elections; county election administration; elections; USA; voter confidence

1. Introduction

Low confidence in elections is a concern for US democracy and is tied to attitudes the American public holds toward government. In 2022, *Gallup* reported that 47% of Americans trusted the judicial branch, 43% the executive, and 38% the Congress. Regarding the 2024 presidential election, only 43% were confident that accurate vote counting took place (Jones, 2022; Saad, 2024). One way the US government can enhance individual confidence in government is by fairly and effectively administering elections, because doing so is likely to create the belief among individuals that they can cast ballots and see the election of candidates that reflect their needs and interests. However, if individuals believe they are election losers, meaning they voted for the non-winning candidates, because of an unfairly or ineffectively administered election, they are less

likely to perceive the elected government as being worthy of this confidence. This concern applies to all democracies: Convincing losers that the election process was fair and professionally administered can boost their confidence, because they believe they have a meaningful chance of having their preferred candidates elected (Anderson et al., 2005). This study argues that a new measure of election administration quality—the county election administration (CEA) index—can be used to assess the degree to which election administration quality shapes the confidence election losers have in elections.

Researchers, such as Anderson et al. (2005), Atkeson et al. (2015), and Bowler et al. (2015), emphasize that election administration is a key mediating mechanism between voters and government, shaping individuals' confidence in elections. Building on previous voter confidence and election losers' research, this study posits that the CEA serves as such a mediating mechanism affecting individual confidence in US elections. Results show that high-quality CEA is a moderating mechanism that enhances the confidence that election losers have in election results and even narrows the gap between losers and winners.

This study contributes to research on election administration, voter confidence, and the losers' effect, being the first study to examine how county-by-county variations in election administration quality (across the 2012 to 2022 years) shape voter confidence. Another contribution is that this study uniquely employs the CEA to evaluate the relationship between county election administration and voter confidence in the US. Also, this article adds to the literature (Anderson et al., 2005; Enders & Thornton, 2021) on factors that moderate the losers' vs winners' effects pertaining to election confidence, presenting the CEA as such a factor. Furthermore, a significant empirical contribution shows that quality CEA leads losers to become more confident in the electoral process. On the other hand, winners, who are generally more confident in election results, do not see a similar increase in confidence.

In line with past research (Jardina & Mickey, 2022; Rush et al., 2025, p. 7) noting that individuals and groups—including electoral winners—can be motivated to support more restrictive voting or election administration laws to preserve their electoral dominance, this study theorizes that election winners do not become more confident because they do not like to see their dominant electoral positions assailed by election losers through higher quality election administration.

In the next sections, this article provides an overview of the research literature on voter confidence, the losers' effect, and election administration, along with theoretical expectations. It then introduces and describes the CEA. Ultimately, it is shown that CEA can boost confidence in elections for election losers, providing insights for policy authorities about how to promote election confidence.

2. Voter Confidence and Elections in the US

Confidence in democratic institutions is the level of trust that a polity's residents have that their government will represent their interests, provide them with reasonable means for having their political voices heard, translate that voice into representation, and use it to create policies that reflect their preferences (Lipset & Schneider, 1983; Wolak & Palus, 2010). According to Almond and Verba (1963; also see Dalton & Shin, 2015), a stable and healthy democracy requires a public with confidence in governing institutions. If individuals lack confidence in government, this may lead them to rely on themselves, other individuals or groups, or extralegal means to address their interests. Over time and cumulatively, a sustained breakdown in

confidence can lower the sense of legitimacy held by the people towards the institutions that represent them (Llewellyn et al., 2013).

There needs to be citizen confidence in government institutions and processes for government stability. Numerous historical examples exist of democracies declining because of low confidence, from Ancient Rome to the Weimar Republic, and more recent cases of democratic backsliding in the 2010s and 2020s, including in many American states (Grumbach, 2022). People's low confidence in the government likely stems from several factors, such as whether a government can reliably address their interests. Certainly, though, an important factor in promoting confidence is the ability of a democratic government to provide valid, reliable, and transparent ways for individuals to request, receive, and cast ballots, and have those ballots translated into elected representatives that reflect the pluralistic or majoritarian will of the people (Dahl, 2008; Ritter & Tolbert, 2024). And, even if a person's ballot does not result in their favored politician winning, they trust the election process enough that they continue to have faith in their representatives (Foley, 2016). For a stable democracy, election losers and winners need to be able to believe in the legitimacy of the electoral system, understood as a perception that the election administrative system exhibits no party favoritism and gives election losers and winners a non-trivial probability of being winners in the next election.

Research confirms this idea (see Bowler et al., 2015; Bowler & Donovan, 2024) that implementing election laws in a neutral and professional manner fosters more favorable individual attitudes towards the election process. Insightfully, several researchers (Bowler et al., 2015; Bowler & Donovan, 2024; Hall et al., 2009) find that a person's sense of trust in election processes and institutions can be captured by the level of confidence they have that their ballot was counted accurately. For example, Atkeson and Saunders (2007) find that one's confidence that their ballot was counted correctly shapes their general faith in the American democratic system; without this confidence, one becomes less likely to believe that democracy works. They find that one's confidence that their ballot was counted reflects the totality of their experiences with the US electoral system, encompassing factors including experiences with election personnel, election equipment, and polling locations. Relatedly, Bowler et al. (2015, p. 2) find that when individuals believe that election rules are implemented fairly, they are more likely to believe that the leaders elected are legitimate political authorities (also see Bowler & Donovan, 2024).

Broadly, government confidence research illustrates that higher confidence is a critical source of democratic stability and legitimacy in the US, and that individual experiences with election processes shape this confidence.

3. Losers' Effect Literature

As a further implication of voter confidence, if elections are perceived as having been conducted in a fair and competent manner, the government will likely command the support of election winners—those who share party allegiance with winning candidates—and election losers—those who share party allegiance with losing candidates. How do election losers' versus election winners' studies operationalize these concepts? Bowler and Donovan (2007), using individual-level survey data, operationalize election winners and losers based on respondents' self-reported partisanship and recent national election outcomes (see also Anderson et al., 2005). If one's party candidate loses in an election, they are an election loser; if one's party candidate

wins in an election, they are an election winner. This article operationalizes these terms similarly to Bowler and Donovan (2007).

Democracy needs the support of election losers to be sustainable. Regarding the history of US elections, Foley (2016) finds that a source of democratic stability has been faith among election losers that they can be competitive in subsequent elections. Without such faith, supported by effectively and fairly run elections, such as in the form of election administration, the sustainability of democracy is endangered. According to Anderson et al. (2005, pp. 9–10), political legitimacy—or a sense of confidence in the government—refers to "people's attitudes toward the functioning of government." In a more detailed conceptualization of confidence and legitimacy, Bowler et al. (2015, p. 2) find that individuals are likely to view "elections as more legitimate where objective measures show they are better administered." In their study, this objective measure is the Election Performance Index (EPI)—a measure that captures how well American states implement elections on average, such as by having quality voting machines, well-trained poll workers, and effectively implemented mail voting. Individuals are more likely to recognize a democratic government as legitimate if they have confidence that elections were well-conducted with high-quality election administration. Connecting this line of thinking to the election winners' versus election losers' research literature, a persistent worry in democracies is that repeat losers in the electorate will develop lower perceptions of the government's political legitimacy. This study argues that when election losers experience fair and competently administered elections, they will be more likely to maintain a sense of confidence or legitimacy toward the government and have faith that their favored candidates could win in future elections (Foley, 2016).

However, if election losers perceive that their repeated losses are attributable to less well-administered elections, they are likely to advocate for electoral system changes. Such losers expect that new electoral rules will increase the probability that their favored candidates will win. Election losers are supportive of many different policy changes, including adoption of non-partisan redistricting, term limits for members of Congress, adoption of a national primary, and adoption of convenience voting laws (e.g., in-person early voting, absentee or mail voting, and same/election-day registration; Anderson et al., 2005; Biggers, 2019; Bowler & Donovan, 2007, 2013; Fougere et al., 2010; Karp & Tolbert, 2010). Bowler et al. (2015) show that, on average, higher state election administration quality bolsters confidence among individuals in elections. This study builds on this expectation by positing that higher-quality CEA will make election losers more confident in election results.

Conversely, election winners, who saw their favored candidates win under the status quo, are more likely to support existing rules (Bowler et al., 2007; Bowler & Donovan, 2007, 2013). In another piece of research, Coll et al. (2022) find that election winners are less likely to favor electoral reforms, including those relating to early voting or mail voting. A component of this literature, relating to the history of non-Hispanic White electoral dominance in the US, notes that White Americans have typically been election winners in US history, due to historical Jim Crow laws or modern voter ID laws that are intended to, or may have the effect of, diminishing turnout among racial and ethnic minorities (Enders & Thornton, 2021; Jardina & Mickey, 2022; Miller & Davis, 2021; Morris & Shapiro, 2025; Rush et al., 2025; Stewart et al., 2016). This literature (see Enders & Thornton, 2021; Morris & Shapiro, 2025) finds that White individuals with high racial resentment tend to attribute voter fraud to racial and ethnic minorities and have less confidence in elections when they believe candidates do not have similarly racially resentful political preferences. Generally, racially resentful Whites are more likely to

perceive themselves as election winners—and racial and ethnic minorities as election losers—who are unfairly robbed of this status by what they believe to be overly accessible voting and election administration rules. The point is that election winners prefer the status quo and are likely to be unaffected or less confident in elections as election rules become more accessible or higher performing.

Based on the losers' vs winners' effects presented in the literature, this study considers the losers' effect to be a well-established phenomenon and demonstrates that election losers' confidence in election results can be increased with high-quality election administration.

4. Election Administration and Confidence

The quality of election administration in the US shapes individuals' confidence in the election process. Alvarez et al. (2013, p. 31) define election administration as a set of rules, procedures, technologies, and election personnel that shape election-related processes and outcomes in the US, where elections are shaped fundamentally by local government rules, processes, and personnel (Atkeson et al., 2015; Burden & Stewart, 2014; Ritter & Tolbert, 2024), as well as local government resources and tax dollars (Kropf, 2016).

Relatedly, Bowler et al. (2015) explore the question of how election administration performance shapes individuals' perceptions that elections are conducted fairly. If such perceptions are more prevalent at the individual or collective levels, the implication is that there will be greater confidence in the electoral system. Connecting with other research (Alvarez et al., 2013; Atkeson et al., 2015, 2024), Bowler et al.'s (2015) work provides evidence that effective administration boosts individuals' faith in elections. Additionally, it uses the EPI as a proxy for election administration performance. The EPI measures how well elections are administered in the US state-by-state, covering a variety of elements of election administration that capture the integrity, accuracy, and voter access dimensons of elections (Gerken, 2009; MIT Election Data and Science Lab, 2024). The EPI has 19 components, including the presence of effective ballot processing and counting practices, the quality of voter registration implementation, and the existence of auditing procedures. Results from this study show that states with higher EPI levels have individuals who are more likely to view elections as legitimate (Bowler et al., 2015).

Although researchers, like Atkeson et al. (2015), maintain that one's experiences with local election administration affects their perceptions of elections, no study has examined how local election administration quality throughout the US shapes voter confidence. According to Ewald (2009), most tasks of American election administration are handled at the county or county-equivalent levels (e.g., townships). Although the US federal and state governments may adopt election laws, these laws are interpreted and implemented by local election authorities. Additionally, local election bodies typically have responsibilities including creating and disseminating ballots, placing and supplying polling sites, fielding and answering prospective voter questions, facilitating and maintaining accurate voter registration records, and requisitioning and maintaining quality voting machines. Most individual experiences with elections are with local election administration.

With the previous literature presented as background, this study posits three hypotheses to contribute to the voter confidence and loser-election administration literature. These are the following:

H1: Election winners will be more likely to be confident than election losers in US elections.

H2: Higher levels of CEA are related to higher levels of confidence in US elections.

H3: CEA will have a negative moderating effect on election winners, such that higher levels of CEA will narrow the confidence gap between election losers and winners.

Election winners/losers are more/less likely to positively view election results because their favored candidates have won/lost the election. Higher CEA quality, which means more effective election administration, will also likely bolster confidence. However, there is likely a moderating effect of CEA on election winners versus losers. Losers are likely to become more confident in election results at higher levels of election administration quality, as such administration provides them with a greater sense that the election process is fair, accessible, and their favored candidates could win in the future. Conversely, election winners are likely to have more confidence at lower levels of election administration quality, when their dominance of election results may be more protected under the status quo of election administration. At higher levels of election administration quality, winners are likely to see a null effect or reduction in their voter confidence, since they may see a more effective election administration as providing too much access to past election losers that could upset the election winners' dominance.

5. The CEA Index

Recently, Ritter and Tolbert (2024) created the CEA index to measure the quality of election administration at the county level. The CEA is a global index that captures the average quality of election administration for the more than 3,000 county or county-equivalent level election jurisdictions in the US. Use of the index in this voter confidence study assumes that individuals have direct (personal) or indirect (through family, friends, media, and other outside sources of information) experiences with the various aspects of CEA, and these shape their confidence in elections. Consistent with previous research (Atkeson & Saunders, 2007), this study assumes that prospective voters directly or indirectly experience local election administration, and this affects their confidence in election results.

Like the EPI, the CEA is meant to capture, on average, how well election administration works for prospective voters, along the dimensions of access (promoting easier individual access to ballot casting), accuracy (ensuring that election counts are accurate), and integrity (providing guardrails against voter fraud). The index includes 19 components (listed in Table 1), which tap into one or more of these dimensions. For example, the mail ballots unreturned component indicates how well a county is doing in facilitating mail voting for prospective voters. The disability access component is also designed to tap into the access dimension, with this component representing how well counties do in making ballot casting accessible for those with self-reported disabilities, such as through more accessible voting sites (see Schur & Kruse, 2015). The residual voting (percentage of ballots cast but not counted) and election audit components are meant to tap into the accuracy and integrity dimensions. Ritter and Tolbert (2024) provide a more extensive discussion of how each of the 19 components taps into one or more of these dimensions.

The index has recently been expanded to encompass the years 2012 to 2022; the data is available as replication material and accessible through the link in the Data Availablility section. The design of the CEA is

based on the methodology of the EPI (MIT Election Data and Science Lab, 2024), except with a focus on the county. Table 1 lists the CEA components and notes in what direction each component contributes to higher CEA index values, which represent higher CEA performance.

Table 1. Components of CEA.

Component	Description	Do higher or lower values on the component contribute to higher CEA performance
Data Completion	Percent of eighteen election administration statistics from the Election Assistance Commission's Election Administration and Voting Survey reported by county	Higher
Mail Ballots Rejected	Percent of mail ballots rejected	Lower
Mail Ballots Unreturned	Percent of mail ballots unreturned	Lower
Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) ballots rejected	Percent UOCAVA ballots rejected	Lower
UOCAVA ballots unreturned	Percent of UOCAVA ballots unreturned	Lower
Provisional ballots cast	Percent of ballots that are provisional ballots	Lower
Provisional ballots rejected	Percent of provisional ballots rejected	Lower
New registration forms rejected	Percent of new registration forms rejected	Lower
Non-voting due to registration problem	Percent of non-voters for voter registration problem reason	Lower
Non-voting due to illness or disability	Percent of non-voters for illness or disability reasons	Lower
Voter registration	County voting age population registration percent	Higher
Residual voting	Percent of ballots cast that are not counted	Lower
Disability access	Difference of aggregate voter turnout between non-disabled and disabled individuals, with higher numbers indicating more access	Higher
Voter lookup tools	How many informational details are offered to voters by a county's state? (includes voter registration status, polling place site, a sample ballot, absentee ballot status, and provisional ballot status)	Higher
Online vote registration (OVR)	Does a county's state have OVR?	Higher
Voter wait time	Average wait time for a voter in a state.	Lower
Post-election audit	Does a county's state have a post-election audit law?	Higher
Risk-limiting audit	Does a county's state have a risk-limiting audit law?	Higher
Electronic Registration Information Center (ERIC) membership	Is a county's state a member of ERIC?	Higher

Source: Ritter and Tolbert (2024).

To create the index, every county is ranked relative to all others per year on every index component, and then these rankings are converted to 0 to 100. Township election administration states have township data aggregated to the county level before creating the county CEA component values. Then, the 19 components are added together per county, and then are mean averaged to produce a CEA score for each county. Five of the 19 CEA indicators come from state-level data (risk-limiting audit laws, OVR laws, voter information lookup tool availability, post-election audit laws, and ERIC membership). To calculate the final CEA index value for each county, the county and state-level components are weighted according to how much they contribute to each county's CEA score (see Ritter, 2024). Completing this sequence of actions produces a final CEA score for each county.

What are the descriptive features of the CEA? In terms of mean averages and standard deviations, CEA values were 58.35 (standard deviation = 13.16) in 2012, 59.2 (standard deviation = 15.01) in 2014, 59.36 (standard deviation = 16.53) in 2016, 58.51 (standard deviation = 17.17) in 2018, 54.89 (standard deviation = 18.24) in 2020, and 60.72 (standard deviation = 14.68) in 2022. Average CEA quality tends to be consistent across this period, except for 2020, because of election administration challenges related to the Covid-19 pandemic. The sizable deviations indicate considerable variations in election administration quality across and within states—something obscured by studies that rely on the EPI, which attaches single administration quality scores to each state.

Figure 1 provides six maps of CEA variation across US counties or county-equivalent jurisdictions from 2012 to 2022. Darker colors indicate higher election administration performance. Generally, election administration performance is higher in states outside of the US's Deep South. However, there is notable within-state variation; in states such as Texas, which the EPI would indicate as having low election administration quality, the CEA instead shows several Texas counties ranking among the best counties nationwide. In contrast, states that usually chart higher on the EPI, like Wisconsin, have a number of counties that rank poorly on the CEA (for EPI statistics, see MIT Election Data and Science Lab, 2024).

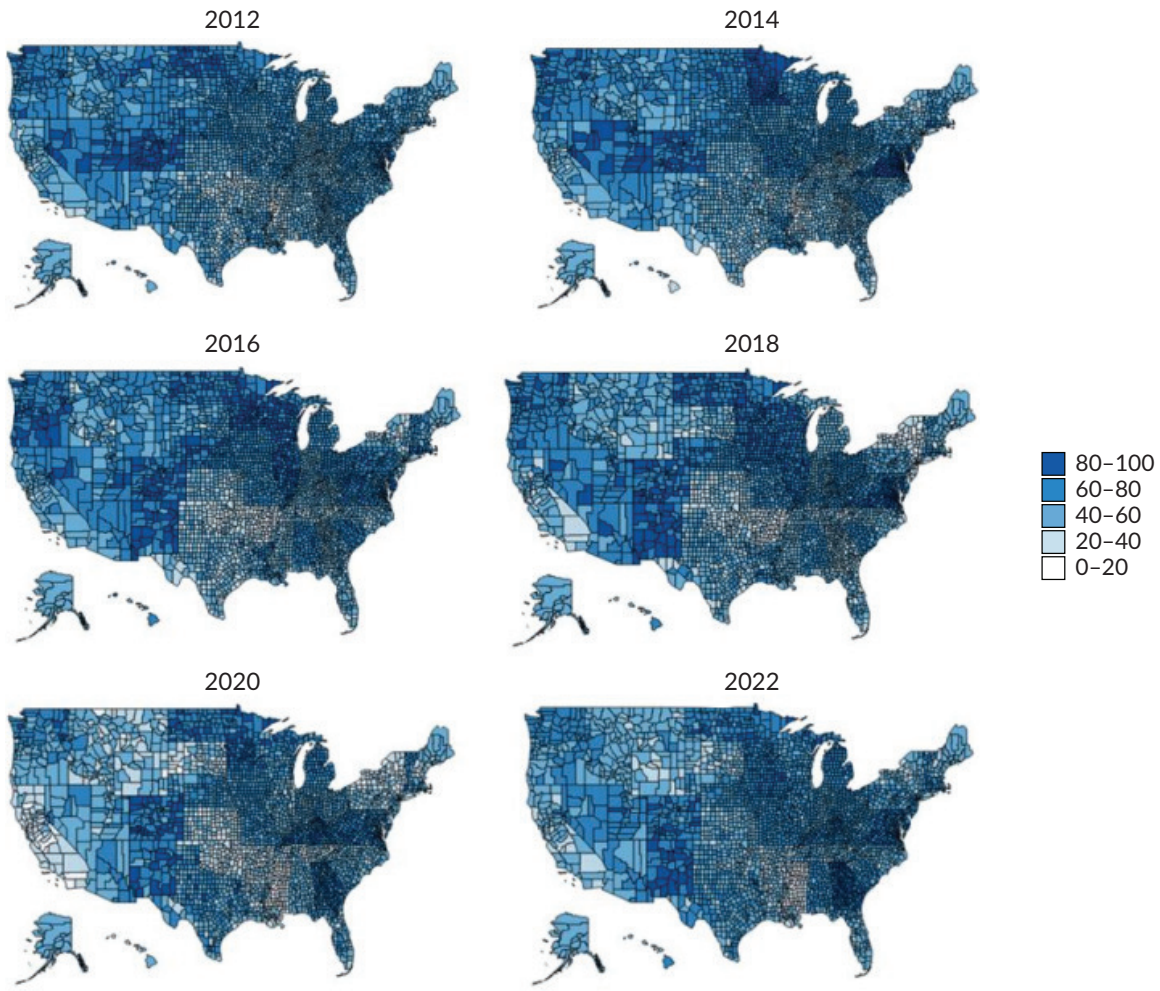

Figure 1. Map of CEA index by county from 2012 to 2022.

6. Data and Methods

To assess this study's inquiries into the impact of the CEA on voter confidence, the Survey of the Performance of American Elections (SPAE) is employed. SPAE data with county geographic identifiers is available for 2012, 2014, 2016, 2020, and 2022. For each of these years, 200 registered voters were interviewed on their election experiences from each of the 50 states and the District of Columbia. The selections of these 200 interviewees per state and the District of Columbia were identified from state-level matched random samples in each of these geographic units. Ultimately, the resulting samples are representative of American adults on key demographic characteristics, including education, income, race, and partisanship.

The data sizes of the models in this study are determined by the number of respondents to the voter confidence questions on the SPAE. There are four voter confidence questions per survey. The first asks one's confidence that their vote was counted as they intended; the second, whether city or county vote totals were accurately counted; the third, whether state vote totals were accurately counted; and the fourth, whether national vote totals were accurately counted. Specifically, regarding the text of these questions, they ask individuals if they are *very confident*, *somewhat confident*, *not too confident*, or *not at all confident* that votes were accurately counted.

The key dependent variables in this study's statistical models (in Tables 2, 3, 4, and 5) are whether individuals are confident that ballots were counted accurately. These variables are coded at four levels, from 0 to 3, with higher numbers reflecting higher levels of confidence. There are dependent variables for confidence in personal vote count accuracy, county vote count accuracy, state vote count accuracy, and national state vote count accuracy.

The three key independent variables are the CEA index, the lagged presidential election winner, and the lagged Senate election winner. The lagged presidential election winner variable is binary, with 1 indicating an individual shares party identification with the winning presidential candidate in the most recent past presidential election, 0 if not. The most recent past presidential election would be the most recent one before a given SPAE survey year. If an individual on the SPAE survey is a Republican/Democrat, and their state's Electoral College votes went to the Republican/Democrat candidate, then they are categorized as a lagged presidential election winner; otherwise, a SPAE response is categorized as a lagged presidential election loser. Coding presidential election winners based on whether a person shares party identification with the national Electoral College winner results in incorrectly signed presidential winner coefficients, contrary to previous research.

The lagged Senate election winner variable is constructed similarly. The lagged election refers to the most recent Senate election in a state before a given survey year. This is a binary variable, with lagged Senate election winner categorized as 1 if an individual shares party identification with the winning Senate candidate from their state, 0 if not.

To avoid the possibility of spurious relationships or omitted variable bias, several other independent variables were included in the statistical models. These include the Cost of Voting Index (COVI), normalized from 0 to 100, with higher values indicating higher on average registration and voting law restrictions in a state (Pomante et al., 2023); this accounts for past research (Atkeson et al., 2024) showing that the restrictiveness of these laws—like the absence of accessible mail voting laws, or the presence of strict voter ID laws—can affect voter confidence. COVI, though moderately correlated with CEA, is theoretically distinct, as the former captures registration and voting laws more directly related to voter turnout, whereas the latter captures elements related to election processes that connect the individual to ballot casting (Ritter & Tolbert, 2021, 2024; Ritter et al., 2024). There is also a Republican trifecta state-level variable (1 = state legislature and governorship controlled by the Republican Party, 0 = divided state government; −1 = state legislature and governorship controlled by the Democratic Party) to account for the fact the Republican Party is more likely to issue rhetorical signals and endorse laws that are theoretically intended to increase voter integrity, which may also be related to voter confidence (Ballotpedia, 2022; Stewart et al., 2016).

A couple of county-level control variables are included to account for possible confounding factors from this level of analysis. One is median county income, to account for the fact that wealthier counties can afford—through higher tax bases and revenues—higher quality election administration, which may also shape confidence (Ritter & Tolbert, 2024; United States Census, 2022). In line with recent research (Enders & Thornton, 2021; Morris & Shapiro, 2025), this study also expects that counties with higher levels of racial diversity—with more potential for racial in-group versus out-group tension—will be more likely to lead to lower levels of confidence in US elections. Accordingly, this study employs a racial diversity index measure originally created by Hero and Tolbert (1996) and constructed from United States Census (2022). This

measure ranges from 0 to 1, and represents the average proportion of racial/ethnic characteristics shared by a randomly selected pair of individuals in a county (the four racial/ethnic groups are White, Black, Hispanic, and Asian); higher levels on this variable indicate more diversity, which is theorized to be negatively related to individual confidence in elections.

Controls are also included for midterm elections (1 = yes, 0 = no) and the average vote margin in a state. In presidential election years, the vote margin is calculated by subtracting the vote margin separating the two leading presidential election candidates by state from 100, and, in midterm election years, the measure is calculated by subtracting the vote margin separating the overall Republican and Democratic House of Representatives percentage vote in the electorate by state from 100 (Leip, 2024).

Other control variables are education (0 = no high school degree, 1 = high school degree, 2 = some college, 3 = 2-year college degree, 4 = 4-year college degree, 5 = post-undergraduate degree), family income (0 = less than $10,000, 1 = $10,000–$19,999, 2 = $20,000–$29,999, 3 = $30,000–$39,999, 4 = $40,000–$49,999, 5 = $50,000–$59,999, 6 = $60,000–$69,999, 7 = $70,000–$79,999, 8 = $80,000–$99,999, 9 = $100,000–$119,000, 10 = $120,000–$149,999, 11 = $150,000–$199,999, 12 = $200,000–$249,999, 13 = $250,000–$349,999, 14 = $350,000–$499,999, and 15 = $500,000 or more), Republican scale (0 = non-Republican, 1 = Weak Republican, 2 = Moderate Republican, 3 = Strong Republican), democratic scale (0 = non-Democrat, 1 = Weak Democrat, 2 = Moderate Democrat, 3 = Strong Democrat), Black (1 = yes, 0 = no), Hispanic (1 = yes, 0 = no), and female (1 = yes, 0 = no).

Since the dependent variables are ordinal variables, this study utilizes multilevel ordered logistic regression models. The multilevel models include three levels, with individuals nested within years, and years nested within counties. These higher levels feature random county and year intercepts to account for varying county and year effects.

7. Results

There are four model sets below, one for each of the dependent variables: personal vote count confidence, county vote count confidence, state vote count confidence, and national vote count confidence. There are two models in each of these sets: The first of these is a baseline model and the second is an interaction model, with interaction variables between the winner and CEA variables. In the analyses below, higher/lower CEA signifies higher/lower election administration quality. Because of space limitations, the predicted probability analyses below focus on the highest confidence ordinal category for each of the dependent variables (the other levels of the ordinal variables indicate that individuals are generally less unconfident in vote counts when they are winners, and when CEA is higher, except for national vote count confidence results, as explained below). Generally, the results indicate that being an election winner and higher CEA leads to more confidence in elections, and higher CEA narrows and often eliminates the loser–winner confidence gap in election vote counts.

The baseline model in Table 2 indicates that being a presidential winner, a Senate winner, or residing in a county with higher quality CEA makes a person more likely to be confident in their personal vote count. Converting the key logistic regression variable values to predicted probabilities, and setting all other variables at mean values, being a presidential winner changes a person's probability of being highly confident in their vote count

from 67.89% to 71.53%, a change of 3.64 percentage points. Regarding being a Senate winner, the impact is a positive 6.42 percentage points, from 67.58% to 74%. Comparing the impact of CEA at minimum and maximum values, an individual in a county with the highest CEA value has a 4.64 percentage points higher likelihood of being highly confident (at 71.67% versus 67.03%).

Table 2. Impact of election winners and CEA on personal vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Presidential winner	0.1880***	0.6376***
	(0.042)	(0.158)
Senate winner	0.3385***	0.6168***
	(0.055)	(0.183)
CEA	0.0024**	0.0075***
	(0.001)	(0.002)
CEA × presidential winner		−0.0080**
		(0.003)
CEA × Senate winner		−0.0050*
		(0.003)
COVI	−0.0001	−0.0001
	(0.001)	(0.001)
Vote margin	−0.0092***	−0.0094***
	(0.001)	(0.001)
Female	−0.0800**	−0.0793**
	(0.029)	(0.029)
Education	0.1111***	0.1116***
	(0.010)	(0.010)
Income quintile	0.0570***	0.0573***
	(0.011)	(0.011)
Black	−0.2834***	−0.2754***
	(0.064)	(0.064)
Hispanic	−0.2614***	−0.2586***
	(0.076)	(0.075)
Republican scale	−0.0583***	−0.0637***
	(0.016)	(0.016)
Democratic scale	0.3360***	0.3419***
	(0.016)	(0.016)
Midterm election	0.3217***	0.3223***
	(0.034)	(0.034)
Median income	−0.00000008	−0.0000001
	(0.000)	(0.000)
Racial diversity	−0.7296***	−0.7356***
	(0.097)	(0.097)
Republican trifecta	0.0920***	0.0936***
	(0.025)	(0.025)
Random county-level effects	0.0831***	0.0849***
	(0.021)	(0.022)

Table 2. (Cont.) Impact of election winners and CEA on personal vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Random year-level effects	0.3588*** (0.036)	0.3563*** (0.036)
Wald chi-square test	1,452.99 ($p = 0.00$)	1,487.08 ($p = 0.00$)
Observations	50,479	50,479

Notes: Logistic regression coefficients, standard errors in parentheses,* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$.

The CEA × winners/losers model of Table 2 shows significant interactive relationships between the presidential winner and CEA, as well as the Senate winner and CEA, variables. Converted to predicted probabilities, these results indicate the loser–winner confidence gap is narrowed with higher CEA quality.

This can be seen with Figure 2's left-hand graph. Figure 2 compares the probabilities of presidential winners and losers being confident, varying CEA from lowest to highest values, with all other variables set at means. At the lowest level of CEA quality, presidential winners are 12.22 percentage points (73.06%–60.84%) more likely than presidential losers to be highly confident in their personal vote counts; conversely, at the highest level of CEA quality, presidential losers are 2.98 percentage points (72.8%–69.82%) more likely than presidential winners to be highly confident in their personal vote counts. This latter difference cannot be discerned with 95% confidence intervals, indicating the winner–loser gap is closed at high CEA levels.

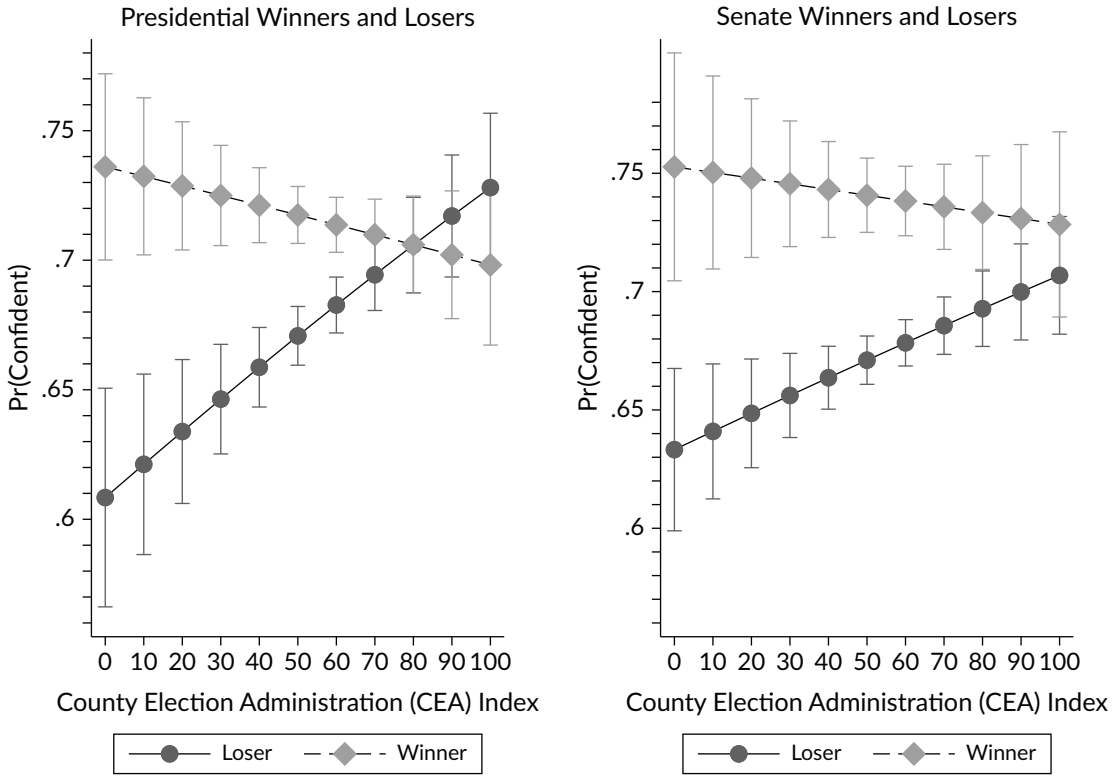

Figure 2. Impact of CEA on personal vote count confidence in presidential and Senate elections (with 95% confidence intervals).

Figure 2's right-hand graph shows a similar finding with Senate losers versus winners, varying CEA (with all other variables set at means). At the lowest level of CEA quality, the loser–winner gap is 11.95 percentage points (75.27%–63.32%) in favor of Senate winners, but the gap narrows to only 2.16 percentage points (72.84%–70.68%) in favor of Senate winners in high CEA quality contexts. Since the latter difference is not discernible with 95 percent confidence intervals, the winner–loser gap is closed at high CEA levels.

Regarding county vote confidence, the baseline model of Table 3 shows that presidential or Senate winners are significantly more confident in county vote counts. In predicted probabilities, a Presidential winner is 5.16 (61.36%–56.20%) percentage points more likely than a presidential loser to be highly confident in county election results. Senate winners are 7.69 (63.95%–56.26%) percentage points more likely than Senate losers to be confident.

Table 3. Impact of election winners and CEA on county vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Presidential winner	0.2310***	0.4301**
	(0.042)	(0.168)
Senate winner	0.3482***	0.7439***
	(0.067)	(0.192)
CEA	0.0012	0.0049**
	(0.001)	(0.001)
CEA × presidential winner		−0.0035
		(0.003)
CEA × Senate winner		−0.0071**
		(0.003)
COVI	−0.0011**	−0.0011**
	(0.001)	(0.001)
Vote margin	−0.0088***	−0.0089***
	(0.001)	(0.001)
Female	−0.1401***	−0.1397***
	(0.025)	(0.025)
Education	0.1178***	0.1180***
	(0.010)	(0.010)
Income quintile	0.0567***	0.0568***
	(0.010)	(0.010)
Black	−0.2560***	−0.2502***
	(0.057)	(0.057)
Hispanic	−0.2718***	−0.2705***
	(0.074)	(0.074)
Republican scale	−0.0803***	−0.0849***
	(0.017)	(0.017)
Democratic scale	0.3256***	0.3304***
	(0.017)	(0.017)
Midterm election	0.1131***	0.1159***
	(0.029)	(0.029)
Median income	0.000002**	0.000002**
	(0.000)	(0.000)

Table 3. (Cont.) Impact of election winners and CEA on county vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Racial diversity	−0.9538*** (0.088)	−0.9545*** (0.088)
Republican trifecta	0.1047*** (0.021)	0.1043*** (0.021)
Random county-level effects	0.0572** (0.018)	0.0580** (0.018)
Random year-level effects	0.3110*** (0.030)	0.3106*** (0.030)
Wald chi-square test	1,673.67 ($p = 0.00$)	1,674.05 ($p = 0.00$)
Observations	55,413	55,413

Notes: Logistic regression coefficients, standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$.

Table 3's CEA x winners/losers model evaluates interactions between the presidential or Senate winner and CEA variables. Only the CEA x Senate winner variable is significant, in a negative direction. This relationship is graphed in Figure 3 as predicted probabilities, comparing the probabilities of Senate losers and winners being confident in county vote counts, varying CEA from minimum to maximum values. At the lowest CEA level, there is a substantively significant gap of 16.29 (68.42%–52.13%) percentage points in favor of Senate winners, but this gap closes at the highest level of CEA, when both losers and winners have about a 60% probability of being confident.

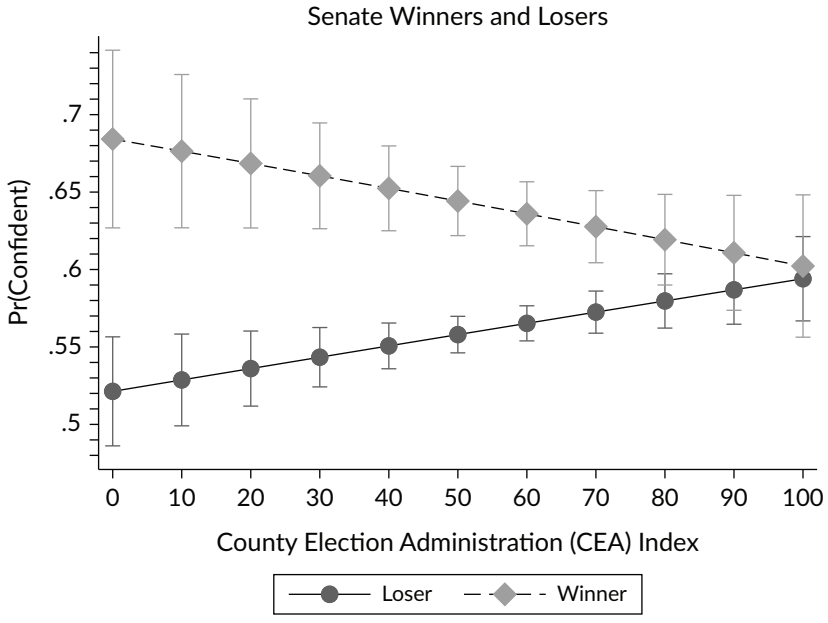

Figure 3. Impact of CEA on county vote count confidence in Senate elections (with 95% confidence intervals).

Regarding confidence in state vote counts, the baseline model for Table 4 shows that being a winner matters. As predicted probabilities, presidential winners are 6.26 percentage points more likely than losers (51.42% versus 45.16%), and Senate winners are 12.31 percentages points more likely than losers (56.65% versus 44.34%), to be confident in these vote counts.

Table 4. Impact of election winners and CEA on state vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Presidential winner	0.2764*** (0.045)	0.5855** (0.187)
Senate winner	0.5453*** (0.073)	0.9676*** (0.218)
CEA	−0.0009 (0.001)	0.0039** (0.002)
CEA × presidential winner		−0.0054* (0.003)
CEA × Senate winner		−0.0075** (0.003)
COVI	−0.0019*** (0.001)	−0.0019*** (0.001)
Vote margin	−0.0191*** (0.001)	−0.0193*** (0.001)
Female	−0.0674** (0.025)	−0.0666** (0.025)
Education	0.0779*** (0.010)	0.0783*** (0.010)
Income quintile	0.0409*** (0.010)	0.0409*** (0.010)
Black	−0.1654** (0.060)	−0.1579** (0.060)
Hispanic	−0.0845 (0.073)	−0.0819 (0.074)
Republican scale	−0.1602*** (0.016)	−0.1665*** (0.016)
Democratic scale	0.2942*** (0.016)	0.3004*** (0.016)
Midterm election	0.0390 (0.029)	0.0420 (0.029)
Median income	0.000005*** (0.000)	0.000005*** (0.000)
Racial diversity	−0.5561*** (0.090)	−0.5582*** (0.090)
Republican trifecta	0.1777*** (0.022)	0.1774*** (0.022)
Random county-level effects	0.0950*** (0.019)	0.0957*** (0.019)
Random year-level effects	0.3531*** (0.030)	0.3539*** (0.031)
Wald chi-square test	1,877.20 ($p = 0.00$)	1,951.67 ($p = 0.00$)
Observations	55,334	55,334

Notes: Logistic regression coefficients, standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$.

However, Table 4's CEA x winners/losers model indicates this gap is closed at higher CEA levels. First, there is a significantly negative interactive relationship between the presidential winner and CEA variables. Figure 4's left-hand graph compares the probabilities of presidential winners and losers being confident, varying CEA from lowest to highest values, with other variables at means. Winners are 13.2 percentage points more likely to be highly confident at the lowest level of CEA (56.36% versus 43.16%), but this gap collapses at about 47% for both losers and winners at the highest level of CEA.

The Senate winner × CEA results are similar. At the lowest level of CEA quality, as depicted in Figure 4's right-hand graph, Senate losers have a 42.72% probability of being highly confident in state vote counts, compared to 64.24% for winners, a gap of 21.52 percentage points. However, at the highest level of CEA quality, this gap shrinks to a statistically insignificant 5 percentage points (50% for winners, 45% for losers, but the confidence intervals for these values overlap).

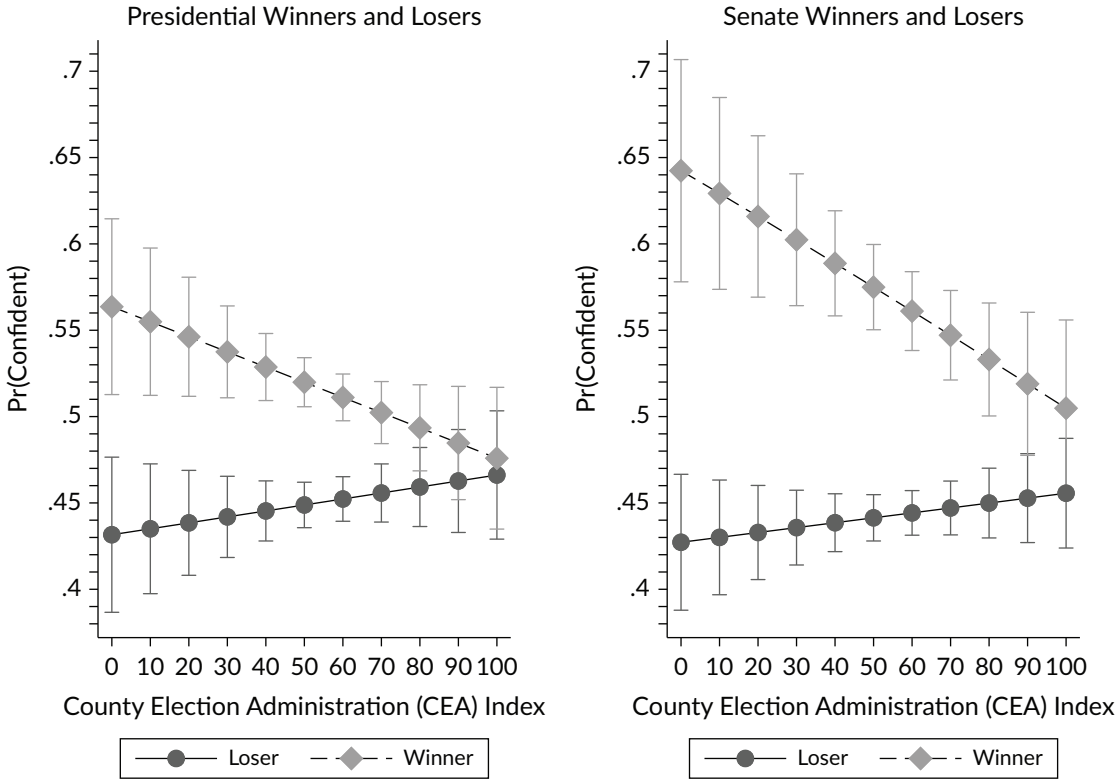

Figure 4. Impact of CEA on state vote count confidence in presidential and Senate elections (with 95% confidence intervals).

Regarding national vote count confidence, Table 5's baseline model results are mixed. Being a presidential winner is significantly negatively related to voter confidence. In terms of predicted probabilities, winners have a 24% probability of being highly confident in national vote results, compared to 31.64% for losers, a difference of −7.64 percentage points. While this may seem surprising, the paradox is likely due to cases when a presidential winner in a state (when the winner's preferred presidential candidate wins a state's popular vote) is not the national presidential winner.

Table 5. IImpact of election winners and CEA on national vote confidence from 2012 to 2022.

	Baseline	CEA × winners/losers
Presidential winner	−0.4111*** (0.036)	−0.3574** (0.165)
Senate winner	0.4195*** (0.061)	0.9167*** (0.182)
CEA	0.0009 (0.001)	0.0041** (0.002)
CEA × presidential winner		−0.0009 (0.003)
CEA × senate winner		−0.0088** (0.003)
COVI	−0.0003 (0.000)	−0.0003 (0.000)
Vote margin	0.0009 (0.001)	0.0009 (0.001)
Female	−0.0325 (0.023)	−0.0323 (0.023)
Education	0.0560*** (0.008)	0.0563*** (0.008)
Income quintile	0.0041 (0.009)	0.0039 (0.009)
Black	0.0302 (0.048)	0.0343 (0.048)
Hispanic	0.0501 (0.067)	0.0504 (0.068)
Republican scale	−0.2474*** (0.016)	−0.2516*** (0.016)
Democratic scale	0.4135*** (0.013)	0.4181*** (0.013)
Midterm election	0.2039*** (0.027)	0.2081*** (0.027)
Median income	0.000003** (0.000)	0.000002** (0.000)
Racial diversity	0.0427 (0.077)	0.0443 (0.077)
Republican trifecta	0.0057 (0.020)	0.0045 (0.020)
Random county-level effects	0.0211 (0.016)	0.0208 (0.016)
Random year-level effects	0.3616*** (0.031)	0.3616*** (0.031)
Wald chi-square test	2,533.03 ($p = 0.00$)	2,770.13 ($p = 0.00$)
Observations	55,251	55,251

Notes: Logistic regression coefficients, standard errors in parentheses,* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$.

Senate winners, in contrast, are more confident in national vote results than Senate losers. Winners have a 33.55%, and losers a 25.48%, probability of being highly confident in this outcome, a difference of 8.07 percentage points.

Table 5's CEA × winners/losers model evaluates interactions between the presidential or Senate winners and CEA variables. Only the interaction between Senate winners and CEA is statistically significant, in a negative direction. Figure 5 shows this relationship as predicted probabilities, comparing the probabilities of winners and losers being confident, varying CEA from lowest to highest values. High CEA performance closes the winner–loser confidence gap, which is 17.78 (39.72% versus 21.94%) percentage points in favor of winners at the lowest level of CEA, but essentially the same at a 28% to 29% probability for Winners and Losers at the highest CEA level.

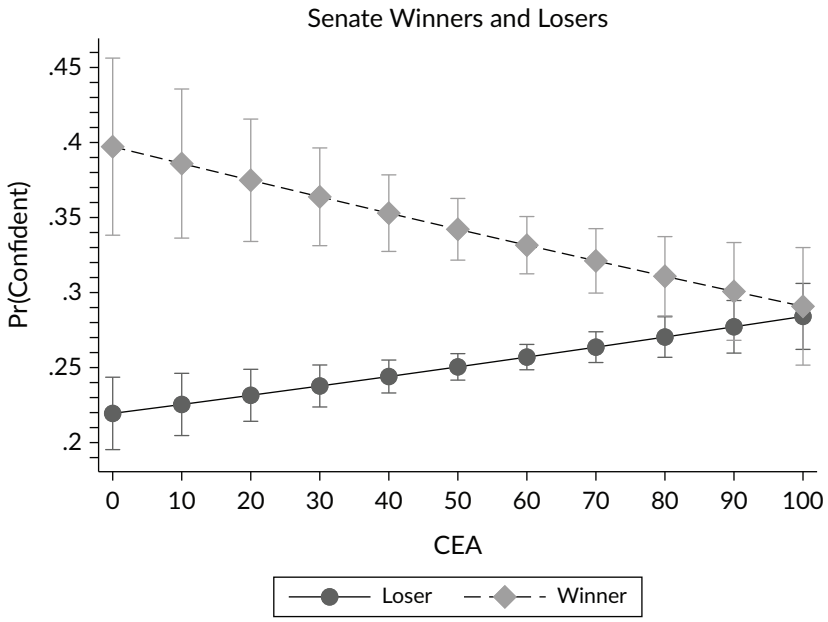

Figure 5. Impact of CEA on national vote count confidence in Senate elections (with 95% confidence intervals).

Regarding Tables 2 to 5 control variables, females (compared to males), Black or Hispanic individuals (relative to individuals of other races), and Republicans (with Independents as the reference group) are less confident. Conversely, higher income or education, as well as Democratic (with Independents as the reference group), individuals tend to be more confident. Higher county median incomes are positively related to confidence, but county-level racial diversity has a negative relationship with confidence, except for national vote counts. COVI is significantly negatively related to confidence at all levels except the national level. Close vote margins are negatively related to vote count confidence except at the national level. In the opposite direction, midterm elections (except for state vote count confidence) and Republican trifecta control of state governments are significantly positively related to confidence at all levels of vote counts.

8. Discussion and Conclusion

In conclusion, this study has shown that election winners are generally more confident than losers in election results in the US. However, this relationship is moderated by higher levels of CEA. At the highest levels of CEA,

the confidence gap between losers and winners is closed for presidential and Senate elections in relation to vote counts. This is generally true for confidence in personal, county, state, and national vote counts, with the only exceptions being a lack of a moderating effect in relation to presidential elections for county and national vote counts. One may note that confidence levels generally tend to be higher for personal vote counts, rather than county, state, and national vote counts; the reason for this is that individuals tend to be more confident in vote counts that are more proximate to themselves, and are more skeptical of vote counts that are more distant from their own vote, as noted in previous research (Stewart et al., 2016). Higher levels of CEA were also shown to have a positive and significant direct effect on personal vote count confidence.

This research makes several important contributions to voter confidence and losers' effect election administration research: First, this study shows how CEA can be used to assess confidence in American elections from 2012 to 2022. Subsequent research and policy development work linked to voter confidence can make use of this index. Second, the various components of the CEA provide insights about what election reformers can do to enhance voter confidence. Possibilities include state adoption of ERIC or election audit procedures to promote election integrity; investment of more state or county financial and personnel resources into procuring or maintaining high-quality election or tabulation machines to increase vote counting accuracy; or increasing the number of polling sites and election workers to optimize voter access.

Regarding other important contributions, this study updates the literature on the losers' effect by showing that high CEA quality can narrow and even eliminate the loser–winner confidence gap. Past literature (Atkeson et al., 2015; Bowler et al., 2015) also demonstrates that election administration is an important moderating mechanism regarding the losers' effect. This study represents an advance from these earlier studies, since the CEA allows one to assess this relationship at the local level for the whole US.

The fact that election winners, compared to election losers, do not see an increase in election confidence at higher levels of CEA may be due to the preference winners have for the election rule status quo. Subsequent research should examine whether this is the case or if there are other explanations. In conclusion, this study demonstrates that CEA is a significant factor shaping election losers' and winners' confidence in elections.

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Conflict of Interests

The author declares no conflict of interests.

Data Availability

Replication data is available at: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/Z68YDY

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