

Are Americans Confident Their Ballots Are Counted?¹

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¹ We thank David Dutwin, Melissa Herrmann, and International Communications Research for assistance collecting the survey data reported in this article, and Melissa Slein for her assistance. We also thank the Carnegie Corporation of New York, the John S. and James L. Knight Foundation, the College of Social and Behavioral Science at the University of Utah, and the USC Annenberg Center for Communication for support of our data collection efforts and our research.

Abstract:

Building on the literature that investigates citizen and voter trust in government, we analyze the topic of voter confidence in the American electoral process. Our data comes from two national telephone surveys where voters were asked the confidence they have that their vote for president in the 2004 election was recorded as intended. We present preliminary evidence that suggests confidence in the electoral process affects voter turnout. We then examine voter responses to determine the overall level of voter confidence and analyze the characteristics that influence the likelihood a voter is confident that their ballot was recorded accurately. Our analyses indicate significant differences in the level of voter confidence along both racial and partisan lines. Finally, we find voter familiarity with the electoral process, opinions about the electoral process in other voting precincts, and both general opinions about voting technology and the specific technology the voter uses significantly affect the level of voter confidence.

The issue of trust and confidence in the electoral process looms large in the United States in the wake of a recent string of disputed and contested federal elections, beginning in 2000 with studies of procedural irregularities, mistakes, and problems associated with the counting and recounting of ballots in Florida and other states (e.g., Caltech/MIT Voting Technology Project 2001; Wand et al. 2001). Efforts to reform the electoral system include passage of the “Help America Vote Act” in 2002 and the introduction of the “Voter Confidence and Increased Accessibility Act” in 2005 (HR550). However, questions persist about the degree of confidence and trust that American citizens and voters have in their electoral process, given that problems again arose in the 2004 presidential election in a number of states (including the pivotal state of Ohio) and in the recent 2006 midterm election (especially in Sarasota County, Florida).² Reflecting the apprehension about how problems in the American electoral process might affect confidence and trust in the electoral process, some prominent policy reports have raised concerns about declining voter confidence. For example, the 2001 report from a commission chaired by former Presidents Carter and Ford was titled “To Assure Pride and Confidence in the Electoral Process” (NCFER 2001) and the report of a subsequent commission, chaired by President Carter and former Secretary of State Baker, was itself titled “Building Confidence in U.S. Elections” (CFER 2005).

Previous research on governmental trust focuses on the broad issue of whether or not citizens trust the government to act in the citizens’ best interest. This line of research has centered on three distinct research questions. First, there have been studies that investigate the origins of trust, or distrust; in other words, the identification of which citizen attributes determine whether or not they trust government. This literature has examined a wide variety of possible covariates of trust in government and has generally concluded that trust in government is tied

² See, for example, Herron et al. 2006 and Stewart 2006.

closely with the political orientations and evaluations of citizens (Stokes 1962; Citrin and Luks 2001; Bowler and Donovan 2002; Brewer and Sigelman 2002; Cook and Gronke 2005).

Additionally, findings by Abramson (1983), Hetherington (1998), and Brewer and Sigelman (2002) suggest that social situations and demographic attributes may influence individual levels of trust.³

Second, research has examined how trust in government may have varied over time. In particular, this question has been a focus of research in the United States. Scholars have examined the apparent decline in the overall level of American trust in government, reflected in the American National Election Survey time-series of questions on this topic. Although much has been written about the decline of trust in government, its origins, and the consequences, a common theme emerges from this research (c.f., Miller 1974a, 1974b; Citrin 1974): changes in trust in government are related to changes in the political environment and citizen evaluations of that environment, no matter what we make of the broader implications of these changes (Chanley, Randolph and Rahn 2000; Cook and Gronke 2005).

Third, research on trust in government has looked at the consequences of trust or distrust. Here, the research literature has studied various outcome variables, testing hypotheses where trust (or distrust) in government might be consequential for political behavior and attitudes. These studies include examinations of the connection between government trust and political engagement, voting behavior, compliance, cooperation, and social capital (see Levi and Stoker 2000). The results of these studies tend to support the theory that an individual's trust in government does not effect voter turnout decisions (Rosenstone and Hansen 1993; Bendor,

³ The effect of demographic results upon individual trust is the subject of some debate as Stokes (1962), Citrin and Lukes (2001), and Cook and Gronke (2005) find demographic characteristics have a marginal effect on trust.

Diermeier, and Ting 2003). However, Hetherington (1999) finds that, although trust in government may not effect turnout decisions, it has a significant effect on voter choice: voters that distrust their government are likely to vote against incumbents.

Historically, the literature on trust in government and on campaigns and elections has taken the trust or confidence that citizens and voters have in the electoral process itself for granted. Here we define trust in the electoral process as the confidence that voters have that their ballot is counted as intended. For the remainder of this article we use the term confidence to refer to a voter's confidence that their ballot was counted as intended. Researching voter confidence in the electoral process is distinct from previous studies on governmental trust since there is no reason to suspect *a priori* that individuals who lack confidence in the electoral system comprise a subset of those who lack trust in government. For instance, voters may not possess confidence in the voting technology used to cast a ballot but trust their elected officials completely. Alternatively, voters may believe that the electoral process is fair and accurate but simultaneously hold the belief that all politicians are crooks. Research in the area of voter confidence is relatively new and consists primarily of published statistics on voter confidence rates.⁴ Scholarly work on the topic of voter confidence has largely focused on problems relating to voting technology within specific geographic locations (Atkeson and Saunders 2007; Magleby, Monson and Patterson 2007; Bullock, Hood, and Clark 2005). We differentiate our work from these previous works by considering the confidence of the American voting population in the electoral process. It is our belief that, in the age of national news programs and the internet,

⁴ Hasen (2005) provides some statistics on voter confidence in his work. CNN exit polls report voter confidence rates in 2004 and 2006 MacManus (2003) estimates Florida voter confidence following the 2002 election. The Winston Group conducted a survey in April 2004 and reported voter confidence across voting technology.

voter opinions about confidence may be formed at the national level. The simple fact that there is so little academic research on voter confidence provides one important justification for our work.

Most of the past research on trust has focused on the generic question of trust in government, though there have been some studies of trust in specific democratic institutions, such as trust in Congress or congressional representatives (Fenno 1978; Bianco 1994; Hetherington 1998) or across a number of democratic institutions, often studied as a combinatorial scale (Brehm and Rahn 1997; Cook and Gronke 2005). Although our research has the specificity associated with some of this newer work that tries to differentiate trust in government across institutional branches (but which often aggregates across the institutions), we focus not on democratic institutions but on the democratic process. Some argue that it is best to compare opinions about existing democratic institutions to alternative forms of government but in the present context we prefer to focus only on confidence in the existing electoral process and not hypothetical alternatives.⁵ Although recent research on eliciting expectations and opinions about future events is promising (Manski 2004), it still is difficult to assess the reliability of survey responses to hypothetical questions.⁶

⁵ Linz (1988) argues that analyzing the legitimacy of a democratic government only makes sense when comparing the legitimacy of a democratic government relative to alternative forms of government.

⁶ As Manski (2004) points out, much care is needed to design survey questions to measure expectations and opinions about hypothetical future events. Working to insure intra-personal comparability is difficult, as is insuring that the question itself allows respondents to reveal the full extent of their uncertainty about future events. Measuring hypothetical future scenarios in opinion surveys involves complex survey questions (e.g., Manski 2004) or multiple survey questions (e.g., Alvarez and Franklin 1994), and it is unclear what analytic gain might be produced by

Despite the fact that previous research has found little relationship between trust in government and a voter's turnout decision (Citrin 1974; Rosenstone and Hansen 1993), Hetherington (1999) finds trust in government may affect vote choice. Similar to Hetherington, we suspect a voter's perception of confidence about past elections may influence voter behavior. However, we expect voters who lack confidence in the 2004 election to be less likely to vote in the 2006 election. Thus, an additional motivation for our work is that we hypothesize voter beliefs about the questions, "do voters have confidence in the election process?" and "do voters trust government?" may trigger different voter behavior.

To help motivate our research, we begin with a preliminary analysis of new data collected from a telephone survey fielded October 26-31, 2006. We present evidence that supports our hypothesis that voters who are less confident in past elections are less likely to vote in future elections. This survey was conducted by International Communications Research, who administered the questionnaire to randomly-selected participants interviewed by telephone.⁷ We asked 1,084 respondents two questions:

- (1) I'd like you to rate the chances that you will vote in the 2006 elections. Are you absolutely certain to vote, will you probably vote, are the chances 50-50 or less, or have you already voted?
- (2) How confident are you that your ballot in the November of 2004 presidential contest between George Bush and John Kerry was counted as you intended?

querying voters about their relative confidence in the current electoral system, relative to ones that the voter may have no information about or experience with.

⁷ Additional information regarding the survey methodology of International Communications Research is provided in Appendix A of the online materials for this article.

Would you say you are very confident, somewhat confident, not too confident, or not at all confident?

Insert Tables 1a & 1b

The results in Table 1a are weighted using population weights provided by International Communication Research. Table 1a depicts a clear relationship between voter confidence about past elections and the likelihood of voting in future elections; individuals with higher levels of confidence in their ballot for the 2004 election are more likely to vote in the 2006 election. In Table 1b we divide respondents into two categories; likely voters, who respond as either already voted or absolutely certain of voting, and possible voters, who responded as being probable or having a chance of 50-50 or less of voting. Classifying respondents into these two categories again shows a positive relationship between confidence and the likelihood of voting.

Furthermore, when specifying a regression model with the four categories of likelihood of voting as the dependent variable and controlling for variables such as confidence, party identification, education, employment status, gender, race, and age, the estimated coefficient for confidence is both positive and significant.⁸ Tables 1a & 1b are far from a definitive study, but these tables suggest a strong relationship between voter confidence and future turnout decisions. We think the relationship identified above between confidence in the electoral process and political participation gives important empirical and normative justifications for the more detailed research we report below on the confidence of voters in the electoral process.

The remainder of the analysis reported in this article investigates the confidence American *voters* have that their presidential vote in the 2004 election was recorded as intended. We study only voters in this article for a number of reasons. First, we suspect (and leave for future research) that voters and non-voters are likely to be different in what factors influence

⁸ See Appendix D for more detail about the model specification and a table containing the estimated coefficients.

perceptions of confidence in the electoral process; specifically, we expect that, for voters, the voting experience, such as the voting technology used to cast the ballot, significantly affects confidence. Second, we are interested in determining the roles of various voting technologies upon confidence. In many cases we think non-voters will be unable to accurately report the particular voting technology used in their area. Finally, the dependent variable in our analysis is the confidence the voter has that their ballot for president in the 2004 election was counted as intended. We leave for future research the development of appropriate survey questions that can assess the hypothetical level of confidence that a non-voter might have had, were they to have participated in some past election.

The goal of this article is to test a series of hypotheses regarding what attributes influence voter confidence. We hypothesize that those historical attempts such as Jim Crow laws and what some have alleged as recent attempts to disenfranchise black voters in Ohio will result in African Americans being less confident than whites.⁹ Second, we analyze the effect of partisanship upon voter confidence. Given the political environment in which our data was collected we hypothesize that Republicans are more confident than Democrats. Third, we investigate how voting technology affects voter confidence. This question is particularly timely as today's electoral environment is witness to large scale changes in the voting technology and debate over the introduction of new voting technologies. Here we hypothesize that voters who use electronic voting technologies are less confident, given the negative media coverage of these voting systems. Fourth, we consider whether knowledge of events (good or bad) from other voting

⁹ Previous research by Bullock, Hood, and Clark (2005) finds black voters in the state of Georgia are less confident relative to whites. As to research that indicates that non-whites might have been disproportionately affected by administrative or voting system problems in recent presidential election cycles, see Sinclair and Alvarez (2004) and Tomz and Van Houweling (2003).

precincts affects an individual's likelihood of confidence; contamination effect. More specifically, we analyze whether voter perceptions of the voting technologies *they do not use* affects their confidence. Given the recent deluge of media attention focusing upon the difficulties and problems with electronic ballots, we hypothesize that negative opinions about electronic ballots affect the confidence of those who do not use electronic ballots.¹⁰ Finally, we are interested in determining the role familiarity with the voting process (especially a voter's level of past participation) has upon a voter's likelihood of confidence. We hypothesize that familiarity breeds confidence; *ceteris paribus* individuals who vote more are more likely to be confident. If confidence influences turnout decisions as we hypothesize above and we show familiarity leads to increased levels of confidence, then when considered jointly these two relationships may help explain why voting is considered by some to be habit forming (Gerber, Green, and Shachar 2003).

Confidence in the election process

The analysis reported in the rest of this article is based on the responses of 2,793 voters gathered in two separate surveys. Opinions regarding the 2004 presidential election were collected from 1,326 voters in the first survey (March 9-15, 2005) and 1,467 voters in the second survey (January 18-24, 2006). Although minor differences exist between the two survey formats, the questions of interest in these analyses were consistent. International Communications

¹⁰ For a more systematic analysis of media coverage of the electronic voting debate, see Hall (2005), Alvarez and Hall (2008).

Research administered the questionnaire to randomly selected participants and conducted the interviews over the telephone.¹¹

The dependent variable of our study is a survey question asked of voters in order to determine their level of confidence in their vote being recorded correctly: “How confident are you that your ballot for president in the 2004 election was counted as you intended?” Respondents were asked to select one of the following options: very confident, somewhat confident, not too confident, and not at all confident. We recoded the responses into the variable *confidence* where a very confident response takes a value of three, a somewhat confident response takes a value of two, a not too confident response takes a value of one, and a not at all confident response takes a value of zero.

We examine the question of voter confidence using both descriptive and regression analyses. The table in the next section examines the overall confidence level among white and African American voters. To isolate the effect of a single socio-economic or political attribute upon a voter’s confidence, we then estimate a multiple logistic regression model where confidence is an ordinal dependent variable with very confident responses coded as a three and not at all confident responses coded as a zero. In order to facilitate interpretation of the logit coefficients, a table of first differences is provided.

Confidence in Voting: A Descriptive Analysis

We present in Table 2 the summary statistics for confidence of white and African American individuals who reported voting in the 2004 election. The results in Table 2 are weighted using population weights provided by International Communication Research.

¹¹ Additional information regarding the survey methodology of International Communications Research as well as the weighted survey marginals is provided in the online materials associated with this article.

Insert Table 2

Table 2 reports approximately 11% of voters in our sample are either not at all confident or not too confident that the electoral system counted their ballots correctly during the 2004 election. This figure is comparable to the 9% of CNN exit poll respondents who answered a similar question following the November 2004 election.¹² Extrapolating the results of our sample to the 123.5 million voters in the 2004 election implies approximately 13 million voters were not confident their 2004 ballot was counted as intended.¹³ Although some may debate the substantive significance of 11%, the results presented in Table 2 show African Americans appear to be far less confident in the electoral system. African American voters are significantly less likely to express either a somewhat confident or very confident response in the electoral system as compared to white voters, ($t = 5.8$). Given the preliminary results suggesting a relationship between confidence and turnout, lower confidence rates among African American voters relative to whites in 2004 may lead to lower turnout rates among previous African American voters relative to whites in 2008. Finally, the large differences between African American and white voter confidence rates suggest that the factors which determine voter confidence may vary substantially depending upon a voter's race.

Logistic Regression Results

In order to investigate the five primary hypotheses we estimate a model using the ordinal measure confidence as the dependent variable, where higher values of the dependent variable

¹² The CNN 2004 exit poll numbers can be viewed at the following website:

<http://www.cnn.com/ELECTION/2004/pages/results/states/US/P/00/epolls.0.html>.

¹³ The total turnout figure was obtained from a website maintained by Michael McDonald

http://elections.gmu.edu/Voter_Turnout_2004.htm.

correspond to a voter who is more confident that their vote for President in the 2004 election was counted as intended. As the dependent variable in this analysis involves an ordinal choice, we use an ordinal logit model to produce estimates for the various independent variables. The regression analysis will continue to focus upon the central questions: (1) does race affect the likelihood of confidence, (2) what role does partisanship have in determining confidence, (3) how do the various voting technologies affect the likelihood of voter confidence, (4) do voter perceptions about elections outside their own precinct affect confidence, that is does a contamination effect exist, and (5) is there a corresponding increase in the likelihood of confidence when a voter's familiarity with the electoral process increases?

Before we consider the estimated coefficients, it is necessary to describe the measures taken to avoid problems associated with possible heterogeneity between the two surveys. Using a likelihood ratio test, we tested for heterogeneity between the two surveys and reject the hypothesis that there are significant differences between the two surveys ($\chi^2=10$ d.f.=13).¹⁴ Below, we present the estimated models, pooling the data from both surveys.

We are also concerned about heterogeneity arising from differences in confidence between white and African American voters. Prior research in the trust in government literature identifies minorities as being less trusting in government than whites.¹⁵ In addition, evidence suggests non-whites have been disproportionately affected by the recent spate of election

¹⁴ The likelihood ratio test consisted of specifying one model in which the estimates for the coefficients were obtained from the pooled data and a second model in which each survey produced separate estimates for the coefficients. A comparison of the two log-likelihoods produces a statistically insignificant chi-square test statistic, allowing us to reject the hypothesis that there are significant differences between the surveys.

¹⁵ Abramson (1983), Michelson (2001), Brewer and Sigelman (2002)

difficulties.¹⁶ Given these previous findings and the survey marginals presented in Table 2, we tested for heterogeneity between white and African American voters in their confidence.

We estimate a logit model pooling across white and African American voters into a single sample while controlling for differences between the races with a single indicator variable. As we show in the first column of Table 3, the coefficient for race is negative and significant in the β_F model, suggesting that African American voters are less confident than white voters, *ceteris paribus*. We suspect the significant difference in confidence rates between the races is based upon two factors. First, confidence rates may be affected by the historical differences brought on by past efforts on the part of white voters to disenfranchise African Americans via methods such as Jim Crow laws (e.g., Keyssar 2000). Second, a perception may exist (whether accurate or not) among the African American and white communities that particular events surrounding the 2000 and 2004 elections were an organized effort to discriminate against African Americans.¹⁷

Insert Table 3

The second step in our analysis of the difference between white and African American voter confidence was to test for parametric heterogeneity; that is, is it appropriate for us to pool white and African American voters into a single sample or are the available covariates associated with confidence in statistically different ways for whites and African Americans? Testing the difference in the likelihood ratios for a model that accounts for individual race effects against a nested model without race effects produces a chi-square test statistic of 28 (13 degrees of

¹⁶ Alvarez and Hall (2004) and Tomz and Van Houweling (2003).

¹⁷ See, for example, “The Long Shadow of Jim Crow: Voter Intimidation and Suppression in America Today.” A Report by PFAW Foundation and NAACP <http://www.pfaw.org/pfaw/general/default.aspx?oid=16367>.

freedom), which is significant at the 99% confidence level. Given this result, the data indicate that whites and African Americans have different determinants of confidence and it is appropriate to model them independently. Unfortunately, in the two surveys we analyze here, we lack sufficient variation across African American voters (191 observations) to produce meaningful estimates for an ordered logit model specific to African American voters.

The difference in confidence and the heterogeneity in the data based upon minority status raise both normative and positive concerns related to participation. Given the historical disenfranchisement of African American voters, any factor that reduces the confidence of this group of voters is troubling since we hypothesize that reducing African American confidence may reduce African American turnout. If the electorate believes minority ballots are not being counted properly, this view may negatively affect the perceived legitimacy of our elected officials among all Democrats regardless of race.

We focus the remainder of our results upon the β_C model, which is shown in the second column of Table 3 (ordinal logistic regression estimates for a sample constrained to only white voters). This model fit statistic is highly significant, and the model produces a set of coefficient estimates that are generally statistically significant, which in most cases are signed consistently with our hypothesized expectations.

The logistic regression coefficients from the β_C model were transformed into first differences and are presented in Table 4, estimated using CLARIFY (King, Tomz, and Wittenberg 2000). The values in Table 4 indicate how a change in a specific attribute will alter the probability of a white voter being confident, holding the other attributes at the median

response level.¹⁸ The effect of a coefficient in Table 3 can be observed in Table 4 as a general rightward or leftward shift in the distribution of the estimated likelihood of the various confidence levels. A variable with a positive effect upon confidence will increase the estimated likelihood a voter is very confident and *vice versa* for a variable with a negative effect upon confidence.

A brief example will help to elucidate the table of first differences. In Table 4, the figures at the top represent the probability that a hypothetical white voter who possesses the median sample attributes is not at all confident, not too confident, somewhat confident, and very confident that their vote was recorded as intended. Suppose we are interested in comparing the probabilities of confidence for a typical white Republican voter with a typical white Democrat voter. In Table 4 we see that a switch from *Democrat* to *Republican* will increase the probability a white voter is very confident by 24 points; from .63 to .87. Similarly, changing the voting technology utilized from *paper/optical scan* to *absentee* increases the estimated probability that a white voter who possesses the other median characteristics is not too confident by four points; from .05 to .09.

Insert Table 4 Here

Citrin (1974) finds that Democrats (Republicans) exhibit higher levels of trust in government when a Democrat (Republican) holds the presidential office. Additionally, the Florida recount in 2000 and the electoral difficulties encountered in Ohio during the 2004 election are examples of election controversies with strong partisan overtones. Finding Citrin's

¹⁸ In some cases such as voter technology the modal response is used. For a listing of the "median" response values see footnotes to Table 4. Note, we do not report the significance of the differences since each of the variables reported in Table 4 was found to be significant using the ordinal logit model which generated the first differences.

result plausible within the context of confidence and recent experiences at the polls, we anticipate that, when Republican and Democrat confidence rates are compared, Republicans will be more confident.¹⁹

As expected, the β_C model ascribes a powerful effect to political identification on a voter's likelihood of confidence. The distribution of the estimated confidence level shifts right for Republican voters when compared to Democratic voters. This shift in the distribution is best seen by the fact that white Republican voters are 24 points more likely to be very confident in the electoral process than their Democratic counterparts. Even independent voters are estimated to be 8 points more likely to be very confident in their vote being counted correctly when compared to Democrats. Similar to past work (Citrin 1974; Bowler and Donovan 2002) we assume that Republicans should be more confident due to a winner's effect from the 2000 and 2004 elections.

The inquiry into the effect of voting technology upon a voter's confidence is appropriate given the shift away from traditional voting technologies toward electronic voting machines (Alvarez and Hall 2005, 2008). Yet debate exists regarding the desirability of this shift toward electronic voting as shown by New Mexico's decision to implement a statewide paper ballot system as a replacement for various electronic voting technologies used in counties throughout the state, and by the debates that have occurred in other states like California, Florida, Maryland and Ohio about electronic voting machines.

Information regarding the technology used to cast a ballot was obtained through two questions. First, voters were asked if they voted at their local precinct, by absentee ballot, or in

¹⁹ We specified a model in which we test for a winner's effect at the state level where an individual was considered a winner at the state level if following the election the governor's mansion and state legislature were controlled by the same party. However, we found no evidence of a winner's effect at the state level.

early voting. If an individual responded yes to voting by absentee ballot, then we coded their voting technology as absentee. Given the small numbers and variety of voting technologies employed by early voters, Tables 3 and 4 do not provide a measure of the confidence level of early voters.²⁰ Individuals who responded yes to voting at their local precinct were asked an additional follow-up question regarding the method by which they cast their ballot.²¹ The respondents who voted at their local precincts were given the following choices regarding the voting technology used at their polling site: electronic voting, punch cards, levers, paper/optical scan, other.

There is one primary conclusion that we wish to highlight when we evaluate the coefficients and first differences associated with the voting technology variables found in Tables 3 & 4. The mode of voting—precinct-based voting compared to absentee voting—makes a difference in a voter’s level of expressed confidence. Under most circumstances voting by any technology other than a paper ballot cast in a voting precinct appears to reduce the confidence of white voters.²² Paper absentee ballots and precinct-cast electronic ballots appear to have the largest negative effect on confidence; precinct-cast lever and punch card technologies exert a smaller yet still significant negative effect upon confidence. The estimated signs for the voting technology coefficients found in Table 4 appear reasonable when compared to results obtained from a study conducted by The Winston Group in April 2004. The Winston Group did not find a significant difference in confidence rates between lever and paper voters but found that punch

²⁰ Additionally, we exclude individuals who responded voting by “other” method; this category contained 9 respondents.

²¹ This question was not asked of absentee or early voters.

²² We show later that a significant difference in confidence does not exist between individuals who cast a paper ballot and those individuals who cast an electronic ballot while holding positive opinions about e-voting.

card and electronic voters were less confident relative to those individuals who vote via paper ballot.²³

A current trend among state election officials is to relax the conditions under which one can obtain an absentee ballot. During the 2004 election 26 states did not place geographic or immobility restrictions upon the ability of voters to cast absentee ballots. This trend is based upon the belief that all-mail voting systems, such as that employed in Oregon, increase voter turnout (Burchett and Southwell 2000; Alvarez and Hall 2004). Given the effect of the coefficient *absentee* on a voter's confidence and the hypothesized relationship between confidence and turnout it is unclear in elections which experience traditionally high turnout that a switch to all-mail voting systems will increase voter turnout.²⁴ Though it is possible that voters may view all-mail voting systems as distinct from an absentee ballot, we think the negative and significant coefficient for *absentee* requires additional study into voter confidence in all-mail voting systems.²⁵

Given the current nationwide trend to shift away from traditional voting technologies and towards electronic precinct-based voting, one of the more interesting results found in the β_C model is the negative coefficient of electronic precinct voting on confidence. There are three possible sources of voter skepticism concerning electronic precinct voting: (1) voters are undergoing a transition period in which they need to become familiar with the operation and security features of the new voting technology; (2) voters simply do not trust the "black box" nature of electronic voting and cannot be convinced that electronic precinct voting is as accurate

²³ Marginals taken from a press release by the Information Technology Association of America. The paper can be found at the website: <http://www.ita.org/es/release.cfm?ID=577>

²⁴ There is a literature suggesting that all-mail voting does not increase turnout (Ornstein 1996 and Jacoby 1996).

²⁵ Our sample has too few respondents from the state of Oregon to perform a meaningful analysis of this question.

and provides similar levels of protection against fraud relative to paper ballots; or (3) voters have seen or heard media reports regarding the controversy about electronic precinct voting and may be concerned about the susceptibility of electronic voting machines to failure or fraud.

Additional research is needed in order to determine whether the negative estimate for the *e-voter* coefficient is a transitory effect brought on by the media and/or implementation of a new voting technology or what voters view as a fundamental deficiency associated with electronic precinct voting.²⁶ If voters persistently view electronic precinct voting as inferior in some aspect to paper precinct ballots, then election officials may have little choice but to slow the transition to electronic precinct voting. However, if the negative coefficient for *e-voter* is simply the reflection of a transition period of voters becoming adjusted to a new voting technology, then perhaps election officials should conduct education campaigns focusing upon the operation, security, and accuracy of the electronic precinct voting technologies.

After the 2000 election many punch card voters may have reduced the confidence they placed in the punch card ballot because of the post-election focus upon hanging chads. Thus, we find it reasonable that voters associate a lower degree of confidence with the punch card technology relative to paper ballots. In response to the 2000 election, government officials sped up the retirement of punch card voting systems, replacing them in many voting districts with electronic voting technology (Alvarez and Hall 2005). Unfortunately, our results show that in the short run this move from punchcard to electronic ballots may not have improved voter confidence; at least among white voters.

²⁶ Eliminating the control variable for media bias and rerunning the model produces a negative and statistically significant estimate for the *e-voter* coefficient. However, the estimated change in likelihood of confidence for a white voter is reduced to a negative five points when evaluating the effect of casting an electronic ballot versus a paper ballot.

We develop the variables *e-opinion* and *e-voter opinion* to evaluate how events outside a voter's own personal voting experience affect their likelihood of confidence; we call this a contamination effect. We use voter opinion about electronic voting as a proxy for evaluating the effect of outside events upon confidence since less than a quarter of respondents voted electronically. We think the large amount of media attention upon electronic voting before and after the 2004 election allowed most voters to form perceptions about electronic voting. If the variable *e-opinion* significantly affects a voter's likelihood of confidence, then we think this is evidence which suggests voter confidence may be affected by events that occur outside the voter's own poll experience.

We estimate the variables *e-opinion* and *e-voter opinion* from the responses to four questions which seek voter opinion about electronic voting. We asked respondents four questions focusing on voter beliefs about the ease of fraud, level of accuracy, potential for machine failure, and advantages to the disabled associated with electronic voting.²⁷ Performing a factor analysis of the four electronic voting questions we identify one principal component and use those results to produce a factor score to summarize each voter's opinions about electronic voting. We include this variable on the right-hand side of our logit model under the variable name *e-opinion*: this variable takes a value from -2.75 to 2.3 where a negative value implies less approval or comfort in electronic voting and a positive value implies greater approval or comfort with electronic voting. We also include a variable we call *e-voter opinion*, which interacts the variable *e-opinion* by the binary e-voter variable (*e-voter opinion* is zero for non-e-voters).²⁸

²⁷ The precise questions asked of the respondents can be found in the Appendix.

²⁸ The variable *e-voters opinion* appears to be an adequate control for *e-opinion* since if we drop e-voters from the β_C model then our estimate on *e-opinion* does not change.

The interaction variable *e-voter opinion* is included to control for the possibility that beliefs about electronic voting may have a different effect on confidence for those who use electronic voting devices.

The significance of the estimated coefficient on *e-opinion* implies a voter's negative assessment of events in other voting precincts negatively affect a voter's confidence. A white voter who does not cast an electronic ballot but has a negative opinion about e-voting, *e-opinion* = -2, is about 11 points less likely to be very confident relative to a white voter with a positive opinion about e-voting, *e-opinion* = 2. Thus, we identify what we think is a contamination effect on voter confidence: voters who are less confident about the election process outside of their own voting precinct will also be less likely to be confident in their own voting precinct. As expected, individuals who vote using electronic ballots and hold negative opinions about electronic voting are *ceteris paribus* less likely to be confident than non-e-voters. However, we note that the confidence rates of e-voters who have positive opinions regarding electronic voting are equivalent to that of paper voters with neutral opinions regarding electronic voting. We think that the finding of a contamination effect allows for the possibility that the media may influence voter confidence: analysis of the media's influence upon voter confidence is one interesting question to be studied in future research (e.g., Alvarez and Hall 2008).

The final hypothesis we test is whether a voter's familiarity or degree of past participation with the electoral system affects the likelihood of confidence. We suspect voter familiarity with the voting process is an important determinant of voter confidence and expect a positive relationship between voter confidence and familiarity. Although we did not directly ask respondents questions regarding familiarity with the voting system, we follow the literature on turnout and use *education* and *age* as proxies for voter familiarity with the electoral system.

Campbell et al. (1960), Wolfinger and Rosenstone (1980), and Blais and Dobrzynska (1998) find higher levels of education coincide with higher voting rates and thus through higher turnout rates highly educated individuals should have greater familiarity with the electoral process. Similarly, research by Wolfinger and Rosenstone (1980), Miller and Shanks (1996), and Matsusaka and Palda (1999) suggest a positive relationship between age and the likelihood of voting.

Additionally, older voters are more likely to possess greater familiarity with the electoral process by the mere fact that older voters have had more opportunities for interaction with the voting process than younger voters. We test for the effect of familiarity on a voter's confidence by estimating the effects of age and education upon a voter's likelihood of confidence. If familiarity with the electoral process has an effect upon voter confidence, we would expect estimated coefficients for *education* and *age* to be both positive and significant in the β_C model.

Respondents' education were classified into six different levels, as seen in Table 4, and these levels were assigned values 1-6 (with 6 representing an advanced degree) with the log of these values used to compute the log of education variable. Table 4 reports how the likelihood of confidence changes with each additional level of educational achievement, holding all other responses at the median level. The effect of education on a white voter's confidence is positive and statistically significant.

In our regression analysis the variable *age* contains five age categories with *age* taking values 1-5 where 1 identifies a voter aged 18-29 and 5 a voter aged 66 and older. We note that the estimate for the *age* coefficient is both positive and significant in the β_A model. Additionally, Table 4 shows that older white voters appear more confident than younger white voters. However, there is the possibility that, relative to younger individuals, older individuals may be less likely to vote if they lack confidence in the electoral process. Thus, it is possible the positive

affect we attribute to age is really a result of self-selection. We think that the magnitude and significance of the estimated coefficients for *age* and *education* are large enough to be robust even with minor self-selection problems. Thus, we conclude that voter familiarity with the electoral system appears to have a positive affect upon voter confidence. The potential for self-selection highlighted in this section shows the need for additional research that investigates how behavior may vary across groups in the presence of low confidence.

Conclusions

How confident voters are that their ballots are counted correctly is a normative issue within a representative democracy as a lack of confidence threatens the perceived legitimacy of an elected government. Furthermore, we believe the issue of voter confidence is not only normative, and we present data supporting the hypothesis that voter confidence has a significant effect upon political participation. Specifically, we find a positive relationship between voter turnout and confidence; more confident voters are more likely to turnout to vote. Although we leave greater investigation of this topic to future research, we think that the study of the relationship between voter confidence and political participation may provide a better understanding of voter behavior in representative democracy.

Our analyses indicate that a significant difference in confidence exists along racial lines, as the proportion of the African American voters who are confident that their vote for President in the 2004 election was counted as intended is significantly lower than the proportion of white voters who are similarly confident. One-third of African American respondents reported a lack of confidence in the electoral system but less than 10% of white respondents reported a lack of confidence in the electoral system. When combined with our results regarding political participation, our analysis showing that African Americans are significantly less confident than

whites raises serious normative concerns regarding the representation of the African American community in the American democratic process.

We conclude that both political affiliation and voter familiarity with the electoral process, as measured by education and age, exert a significant influence upon confidence. We think that white Republicans are more confident than white Democrats due to a winner's effect stemming from the 2000 and 2004 national elections. We find that increased levels of voter familiarity result in a higher likelihood of confidence, which pending additional research on confidence and voter turnout may give justification to the argument that voting is habit forming (e.g., (Gerber, Green and Shachar 2003). Although most of the coefficients on the demographic variables in our model have signs similar to those found in studies on trust in government, our research differs from past research on trust in government, as we find a strong and direct relationship between party identification and voter confidence.

We find that the probability of a voter being confident is significantly affected by the voting technology; with white voters who cast their ballot via a paper precinct technology being more likely to be confident than white voters who cast their ballot via punch card, lever, or electronic precinct voting technologies. We present additional evidence supporting the conclusion that the confidence rate among white voters using absentee ballots is significantly lower when compared to a paper/optical scan ballot technology. One very productive avenue of future research will be to look more specifically at individual voting technologies, and to study whether different types of electronic precinct voting technologies, for example, may produce a

voting experience that leads to greater voter satisfaction and confidence than other precinct voting systems.²⁹

Because there is little extant research on the confidence of voters and citizens in the American electoral process, we see four major questions needing additional research and a host of additional questions that can be evaluated while investigating the big four. First, does a relationship exist between a voter's confidence in the electoral process and their likelihood of voting? Second, what are the characteristics that influence the confidence of non-voters, and are non-voters less confident than voters? Third, what are the key attributes of confidence for minorities? Fourth, among all eligible voters lacking confidence in the voting system, does their likelihood of participation in the electoral process vary by race, party identification, or age? When do voters appraise their confidence in the electoral process and how do the media effect this appraisal? Finally, do voters cast a ballot believing it will not be counted as intended or do voters develop this opinion after election results are observed? Only after we have better understood the confidence of voters and citizens in the electoral process, can we assess the affect of recent events --- and recent reform efforts --- on the perceptions and behavior of Americans.

²⁹ There is new promising research in this direction, for example recent work by Herrnson et al. (2008) or Goler and Selker (2006). More research of this type is necessary in this area; unfortunately the limited extent of our survey data does not give us the opportunity to examine specific makes or models of voting technologies.

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Table 1a: Correlation Between Confidence and Likelihood of Voting

	Already Voted	Absolutely Certain Will Vote	Probably Vote	50-50 or Less
Not at all confident	4% (2)	8% (43)	16% (20)	16% (11)
Not too confident	9% (4)	11% (59)	19%(23)	30% (19)
Somewhat confident	20% (10)	19% (106)	32% (39)	23% (15)
Very confident	68% (34)	62% (340)	33% (41)	31% (20)
Total	100% (50)	100% (548)	100% (123)	100% (65)

Table 1b: Collapsed Analysis of the Correlation Between Confidence and Likelihood of Voting

	Likely Voter ^{a,c}	Possible Voter ^{b,c}
Not at all confident	8% (45)	16% (31)
Not too confident	11% (63)	22% (42)
Somewhat confident	19% (116)	29% (54)
Very confident	63% (374)	33% (61)
Total	100% (598)	100% (188)

a – Respondents who report having voted early or absolutely certain will vote.

b – Respondents who report being probable to vote or reporting a 50% chance or less they will vote.

c – Probability the proportion of possible voters who respond as being not confident is equal to the proportion of likely voters who respond as being not confident is less than 1% ($t = 5.2$).

Table 2: Confidence of White and African American Voters

Confidence	Whites ^a	African Americans ^a	Total
Not at all confident	3.5% (85)	15.9% (47)	4.8% (132)
Not too confident	5.0% (124)	16.5% (48)	6.3% (172)
Somewhat confident	21.8% (532)	37.3% (110)	23.4% (642)
Very confident	68.7% (1,681)	29.7% (87)	64.5% (1,768)
Don't Know/Refused	1.0% (24)	0.6% (2)	1.0% (26)
Total	100% (2,446)	100% (294)	100% (2,739)

a – Ignoring the don't know/refused responses, the probability that the proportion of African Americans who respond as being not confident is equal to the proportion of whites who respond as being not confident is less than 1% ($t = 7.6$).

**Table 3: Ordinal Logit Coefficient Estimates for Confidence:
Combined Data, White Model, African-American Model**

Variable	African American & White		White	
	β_F	Standard Error	β_C	Standard Error
Age	.14	.04†	.14	.04†
Male	.40	.09†	.41	.10†
log(Education)	.66	.09†	.70	.10†
Not employed	-.21	.10†	-.24	.11†
City	-.15	.10	-.14	.10
Republican	1.31	.12†	1.35	.13†
Independent	.33	.10†	.37	.11†
E-voter	-.53	.13†	-.67	.14†
Lever	-.34	.15†	-.41	.15†
Punch card	-.22	.13	-.29	.14†
Absentee	-.60	.15†	-.67	.16†
E-opinion	.11	.04†	.12	.04†
E-voter opinion	.50	.08†	.56	.08†
Race	-.95	.16†	-	-
Constant 1	-2.49	.23	-2.57	.25
Constant 2	-1.56	.22	-1.60	.24
Constant 3	.22	.21	.22	.23
Observations		2,594		2,403
Full vs. null model χ^2 test statistic ^a		311		242

a – This is a test of model significance. We present the χ^2 test statistic when testing if the model presents a significant improvement over that predicted by a model comprised solely of the intercept terms.

† indicates significance at 95% level

Table 4: First Differences for the White Voters^a; Model β_c

	Not at all Confident	Not too Confident	Somewhat Confident	Very Confident ^c
Median white voter	3.5	5.2	28.3	63.0
Voter characteristics				
Male	-1	-2	-6	+9
Not employed	+1	+1	+4	-6
City	+1	+1	+2	-4
Republican	-3	-4	-17	+24
Independent	-1	-1	-6	+8
E-voter	+3	+4	+9	-16
Lever	+2	+2	+6	-10
Punch card	+1	+2	+4	-7
Absentee	+3	+4	+9	-16
E-opinion ^b	0	-1	-2	+3
E-voter opinion ^b	-4	-5	-4	+13
No H.S. Degree	+7	+6	+5	-18
H.S. Degree	+2	+2	+3	-7
Some College	-	-	-	-
Vocational School	-1	-1	-3	+5
College Degree	-2	-2	-5	+9
Advanced Degree	-2	-3	-7	+12
Age 18-29	+1	+1	+4	-6
Age 30-39	0	+1	+2	-3
Age 40-49	-	-	-	-
Age 50-65	0	-1	-2	+3
Age 66+	-1	-1	-4	+6

a - Holding all responses at the median characteristic: age 40-49, female, some college, paper ballot, does not live in a large city, Democrat, employed and media effect of -.14.

b - The first difference for media effect is computed by increasing the median response one unit.

c - The total change in estimated confidence resulting from a change in voter characteristics must sum to zero across the four confidence categories. As the distribution of voters across the four confidence categories is skewed toward the right (very confident), any change in voter characteristics which results in a change in confidence is likely to affect the probability of a very confident response differently than a not at all, not too, or somewhat confident responses.

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