

Voting Technology and the Election Experience: The 2009 Gubernatorial Races in New Jersey and Virginia

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Abstract: In this paper, we examine the attitudes of voters regarding the voting experience in the 2009 gubernatorial elections in New Jersey and Virginia. We focus especially on the way in which voting technology experiences that voters have had **affect** their confidence in the voting process, their attitudes toward fraud and reform, and other aspects of the voting process. We find that voters are sensitive to the voting mode they use—in person voting compared to absentee voting—as well as to whether they get to vote on the technology they prefer (paper versus electronic). Finally, the privacy that voters feel in the voting process is also important in shaping the voter's confidence.

1 Introduction

In the aftermath of the 2000 presidential election in the United States, groups like the Caltech/MIT Voting Technology Project (VTP) began studying the voting technology and the process of voting in American elections [VTP 2001].¹ Many of the early studies like the work of the VTP, though, focused either on survey data collected for other purposes (like the Census Bureau's Current Population Survey) or on the analysis of aggregated election returns [AI09]. These studies, while important, were unable to study in detail the voting experience --- and they were unable to relate the voting experience directly to the technology used by the voter to cast his or her ballot.

However, in recent years, the situation has changed, as detailed survey data on the voting experience has begun to be collected in earnest. In the 2007 gubernatorial elections in three states, in the Super Tuesday presidential primary races in 12 states, and then in the 2008 presidential election, the VTP conducted surveys in the appropriate states to determine the quality of the voting process across all modes of voting—early voting, absentee voting, and election day voting. The goal of these studies was to determine the way in which voters experienced the election process. In this paper, we use data from the most recent study by the VTP of voting experiences in New Jersey and Virginia in each state's 2009 gubernatorial elections. These studies built, in part, on earlier work designed to study the voting process as experienced by the voter. Scholars have studied the confidence of voters in the voting process [AH08; AHL08, AHL2009; AS05; BHC05], experience voters have had with their poll workers [HMP09; Ha09], and combinations of these experiences [AAH07; CMMP08]. However, most of these studies have been state-specific studies and many have focused on Election Day voting experiences, not considering the fastest growing part of the voting experience. These studies have also all focused on federal elections.

In this study, we consider a different type of American election, the off-year gubernatorial election. Five states have off-year gubernatorial elections; Virginia and New Jersey are on one cycle (e.g., 2009, 2005, 2001) and Kentucky, Louisiana, and Mississippi are on a different cycle (e.g., 2007, 2003, 1999). Our data analysis allows us to consider voter confidence in this slightly different context. In this study, we also specifically focus on how voters' experiences were affected by the voting technology they used to cast their ballots and the voting technology – paper or electronic – that is their preference.

¹ This paper uses data from the *2009 Survey of the Performance of American Elections*, which was funded by The Pew Charitable Trusts *Make Voting Work* Initiative. All findings are based on the analysis of the authors and do not reflect the views or opinions of the Pew Charitable Trusts.

2 Data and Analysis

The data in this analysis come from the *2009 Survey of the Performance of American Elections* (SPAE), and builds on the *2008 Survey of the Performance of American Elections*, which was the first nationwide effort to gauge the quality of the election experience from the perspective of voters [AAB09]. The data presented here come from the 2009 Survey of the Performance of American Elections (SPAE). The 2009 SPAE was an Internet survey that involved 1,200 interviews of registered voters in New Jersey and 1,300 interviews of registered voters in Virginia. The survey was in the field the week following the election, beginning Thursday, November 5 (two days after the election), with 98% of interviews completed by Monday, November 9. *YouGov/Polimetrix* conducted this survey entirely on the Internet using state-level matched random samples in each of the states. The respondents were recruited through a variety of techniques and the resulting sample matched the state populations on important demographic characteristics, such as education, income, race, and partisanship. The survey questionnaires were pilot tested in the November 2007 gubernatorial elections in Mississippi, Kentucky, and Louisiana and in the February 2008 Super Tuesday presidential primary. The main body of the survey asked a series of items about the experience of voters on Election Day, in early voting centers or during postal voting.

We checked the validity of the results by comparing the self-reported vote for governor in each state against the actual election returns. The results were very close and easily within sampling error.² We also compared some simple cross-tabulations within our survey with similar cross-tabulations from the network exit polls. We do not report those results here, but there is very close agreement between our results and the exit polls when we break the results down by sex, party, and reported 2008 presidential vote.³

3. Voting Experience

The voting experience is an important part of the democratic process. It is through voting that individuals express their preferences for policy, either through the election of representatives or directly through voting on referenda and initiatives [Pi67]. The act of voting has changed dramatically over the past 200 years [Be04; Ke00] and voters have certain expectations about the voting process, including about voter privacy and voting experiences [e.g., KMN10; GHD09]. We also know that variations in the voting experience can affect voter confidence and their attitudes about the voting experience. For example, voters who rate their poll worker-voter interaction higher are more likely to be confident that their votes were counted accurately [HMP09]. Likewise, we know that absentee voters are less confident that their votes are cast correctly compared to voters

² For example, in New Jersey the unofficial return results/survey results were Corzine (D) 44.4/42.1, Christie (R) 49.0/48.4, and Daggett (I) 5.7/8.6. In Virginia, the results were McDonnell (R) 58.6/59.4 and Deeds (D) 41.3/39.9.

³ In the interest of brevity, we do not report standard errors in this paper. In general, in an analysis of 1,200 observations and a mean proportion at 50%, the 95% confidence interval is $\pm 2.9\%$.

who vote in person in a precinct (either on election day or early) [AHL08]. We also know that problems at the polls – long lines, machine problems, and the like – all serve to lower evaluations of the voting experience at the polling place.

Our analysis here considers the voting experience in New Jersey and Virginia in November 2009 and focuses on the role that technology plays in the voting experience. We not only consider the role of voting technology, but also the use of electronic media prior to the election to learn more about the voting process. We start our discussion with this pre-election information search process and then consider the election process itself. We conclude by examining voter evaluations of election fraud.

| | New Jersey | Virginia |
|--|------------|----------|
| Candidate position statements | 74% | 75% |
| News about the election | 64% | 62% |
| Polling place location | 17% | 23% |
| Sample ballots | 15% | 15% |
| Instructions on how to vote absentee | 7% | 8% |
| Instructions on how to vote at a polling place | 5% | 3% |
| Other | 4% | 5% |

Table 1: Use of the Internet for Political Use

One critical part of the Internet and society is that individuals can now use the Internet to collect information about the voting process prior to voting. Voters can use the Internet to find out more about where they can vote, how to vote, and about the candidates for whom they can vote. Interestingly, we find that only 34% of respondents in New Jersey and 47% of those in Virginia reported that they had gone “online to find out information about the November 2009 election.” In Table 1, when we examine the reasons why individuals visited the websites that they did, we find that most people used the Internet to find information about the candidates or track news about the election. Fewer than 1 in 5 respondents who went online did so to get information about their polling place, sample ballots, or information regarding how to vote. Respondents generally used the Internet for news about the election and the candidates, relying on the Internet only a little to understand the mechanics of voting.

Once voters get to the polling place, they may or may not have to wait in a line to vote. The 2008 SPAE found that African Americans wait in line to vote significantly longer than do Whites. For instance, in November 2008, African Americans waited twice as long to vote (27 minutes, on average) than did Whites (13 minutes). Although some of this difference may be attributed to the excitement generated by the Obama campaign

and a surge in African-American turnout in November 2008, examples of this pattern in other elections suggests the need for a richer explanation of this pattern. One important explanation may be that some individuals arrive at the polls before they open, or there is a clustering of voting at specific times.

We find that time of voting does explain some of the wait time problem. African Americans did report waiting longer to vote in both New Jersey and Virginia. In New Jersey, the estimated average wait was 1.7 minutes for Whites and 3.2 minutes for Blacks; in Virginia, the averages were 2.8 and 8.2 minutes, respectively. However, when we exclude early-arrivers (people who arrive before the polls are open) from the calculations, average wait times in Virginia were 2.7 minutes for Whites and 6.4 minutes for Blacks. The racial disparity remains, but it has been reduced. The racial differences are also explained by the fact that African Americans are more likely to live in large cities where lines are longer, regardless of race, compared to smaller towns and suburbs. Even so, *within community types*, African Americans still waited longer. For instance, within big cities, African Americans reported waiting 11 minutes to vote, compared to 5.9 minutes for Whites; within the outer suburbs, the reported waits were 3.4 minutes for Blacks and 2.0 minutes for Whites.

| | | Precinct Voting Technology | | | |
|-----------------------|---------|----------------------------|--------|----------|--------|
| | | New Jersey | | Virginia | |
| | | DRE | DRE | OPSCAN | MIXED |
| No Line | N | 660 | 372 | 170 | 103 |
| | Percent | 70.66% | 62.42% | 68.55% | 68.67% |
| Less than 10 Min Line | N | 247 | 185 | 59 | 40 |
| | Percent | 26.45% | 31.04% | 23.79% | 26.67% |
| 10- 30 Min Line | N | 24 | 29 | 13 | 6 |
| | Percent | 2.57% | 4.87% | 5.24% | 4.00% |
| 30 or More Line | N | 3 | 10 | 6 | 1 |
| | Percent | 0.32% | 1.68% | 2.42% | 0.67% |

Table 2: Lines and Voting Technology

When we consider line length and voting technologies, we see that, in Virginia, voters were more likely to encounter some line than in New Jersey, although roughly two-thirds of voters in Virginia encountered no line. We do see that voters in precincts with DREs were more likely to wait in a line of any length to vote compared to precincts with optical scan voting or a mix of both technologies. However, voters in optical scan precincts were more likely than voters in DRE precincts (7.66% to 6.55%) to wait in a line that was 10 minutes or longer. Voters in precincts that had a mix of both technologies were least likely to wait in a line 10 minutes or longer.

4 Voter Confidence

One summary measure of the voting experience is whether the voter thinks that his or her vote was counted correctly. The standard metric for evaluating voter confidence has been to ask: “How confident are you that *your vote* in the General Election was counted as you intended?” In addition, some scholars have also begun to probe voter confidence in the count at higher levels of government; in this survey, we asked about confidence in “your county or city” and in “your state as a whole.” The purpose of asking all three questions is that one taps into a voter’s confidence their the votes in their precinct will be counted, and the other two tap into confidence in the location where the votes are aggregated (in their city or county, where elections are administered in the United States) and were the final results are certified (at the state level).

Table 3 presents the percentages of respondents stating they were “very confident” in each state. The results are broadly consistent with other surveys of experience with government services, in which respondents generally report high ratings for their personal experience and lower ratings when asked about the experience of other people, or the system in general. In the November 2008 general election, 72% of New Jersey voters and 74% of Virginia voters said they were “very confident” their votes were counted as cast. The results for 2009 are very similar to those in 2008, with Virginia voters becoming slightly more confident and New Jersey voters slightly less confident. This might just be due to random variability, though the direction of the movements is consistent with the pattern that voters for winning candidates tend to express greater confidence than people who vote for the losers.

The New Jersey gubernatorial race was much closer than Virginia, which may explain some of the shift across the past year. Furthermore, when we look at how the confidence of partisans shifted between 2008 and 2009, the pattern is consistent with the “winners are more confident” theme. The next table reports the percentage of respondents saying they were “very confident” their own vote was counted as cast, by state and by party, across 2008 and 2009.

| | Democrats | | | Republicans | | | Independents | | |
|------------|-----------|------|-------|-------------|------|-------|--------------|------|-------|
| | 2008 | 2009 | Diff. | 2008 | 2009 | Diff. | 2008 | 2009 | Diff. |
| New Jersey | 78% | 62% | -16% | 70% | 76% | +6% | 69% | 66% | -3% |
| Virginia | 81% | 66% | -15% | 71% | 81% | +10% | 68% | 76% | +8% |

Table 3: Change in Confidence, 2008 to 2009

In Table 4, when we consider confidence across various levels of government, we see that there is a clear decline in confidence as we move from the precinct to county to state levels. Over thirty percent of respondents were less confident in the overall state vote count than in how their own vote was counted. In Virginia, which has a non-partisan Board of Elections, 29% of Democrats and 25% of Republicans were less confident in the overall state vote count. In New Jersey, elections are run by an elections division that is located in the Secretary of State’s office; the Secretary of State was associated with the unpopular Democratic governor. In New Jersey, 29% of Democrats and 39% of Republicans were less confident in the statewide count. In both states, roughly 35% of Independents were less confident in the statewide count.

| | New Jersey | Virginia |
|------------------|------------|----------|
| Your Vote | 68% | 75% |
| Your City/County | 54% | 63% |
| Your State | 41% | 51% |

Table 4: Voter Confidence Across Levels of Government

5 Voter Confidence and Technology

We also examined voter confidence across the various voting technologies used. Here, we see first that voter confidence varies across modes of voting. Absentee voters have the lowest level of personal confidence and Election Day voters have the highest levels of confidence. In Virginia, the personal confidence gap between Election Day and absentee voters is approximately 8 percentage points and in New Jersey, it is 14 percentage points. In New Jersey, the gap remains, but becomes smaller as we move to county-level and state-level confidence. In Virginia, the gap actually reverses at the state level, with absentee voters more confident than precinct voters. This reversal in Virginia largely occurs because precinct voters have more of a decline in confidence between personal and state confidence levels; the decline is much less for absentee voters.

In Table 5, we also see differences across the voting technologies used. In Virginia, some voters vote on DREs and some vote on optical scan. Most counties use only one technology or the other, but a small number of counties—including one of the most populous counties in the state, use a mix of optical scan and DREs in the precincts in the county. In Virginia, we see that DRE and optical scan voters have similar levels of confidence at all three levels and that individuals in counties with mixed technology are slightly less likely to be confident.

| | | New Jersey | | | Virginia | | |
|--|------------------|-----------------------|--------------------|----------------|-----------------------|--------------------|----------------|
| | | Not/Not Too Confident | Somewhat Confident | Very Confident | Not/Not Too Confident | Somewhat Confident | Very Confident |
| Mode of Voting | Election Day | 4.17% | 25.91% | 69.92% | 3.51% | 20.02% | 76.47% |
| | Early | 20.00% | 20.00% | 60.00% | 2.94% | 23.53% | 73.53% |
| | Absentee | 10.13% | 34.18% | 55.70% | 8.57% | 22.86% | 68.57% |
| Congruence: Technology Used and Wanted | Incongruence | 11.01% | 33.03% | 55.96% | 3.01% | 26.42% | 70.57% |
| | Congruence | 3.94% | 25.79% | 70.27% | 3.92% | 17.84% | 78.24% |
| Preferred Voting Method | Hand Count Paper | 6.90% | 37.93% | 55.17% | 2.33% | 34.88% | 62.79% |
| | Opscan | 5.00% | 41.67% | 53.33% | 6.14% | 22.81% | 71.05% |
| | DRE | 3.85% | 24.67% | 71.48% | 2.55% | 16.41% | 81.05% |
| Precinct Voting Technology | DRE | 4.62% | 26.61% | 68.78% | 3.99% | 19.65% | 76.36% |
| | Opscan | | | | 3.49% | 17.44% | 79.07% |
| | Mixed | | | | 3.18% | 27.39% | 69.43% |

Table 5: Voter Confidence by Various Technology Factors

We also asked voters about their preferred method of voting. DREs were the top choice in both states, with 90% of New Jersey residents and 74% of Virginia residents making this choice. Optical scan was the choice of 6.7% in New Jersey and 21.2% in Virginia; hand counted paper ballots are the choice of 3.1% in New Jersey and 4.7% in Virginia. Some voters have congruence between their voting preference and the technology on which they vote; voters who want to vote on a DRE and vote in a precinct in New Jersey have such congruence, but voters who want to vote on a paper ballot that is counted via optical scan can only have such congruence if they vote absentee. A lack of such congruence could affect voter confidence, given that the voter would rather use a different technology.

When we examine confidence by preferred voting technology, we see that DRE voters are most confident that their vote will be counted accurately in both states. In Virginia, there is a monotonic decline in confidence from DREs (81% very confident) to optical scan (71%) to hand counted paper ballots (62.8% very confident). In New Jersey, the decline is roughly 15 percentage points from DREs to either optical scan or hand counted paper ballots. When we examine the issue of congruence, we see that voters who are congruent are more confident in both states, with the gap much larger in New Jersey than in Virginia. This is likely the result of it being difficult to vote using an alternate method in New Jersey, where absentee voting policies are not very liberal.

6 Voter Privacy and Problems at the Polls

The voting process is one that, since the turn of the 20th century, has been a private process with secret ballots. There is a normative idea that voting will be private, with ballots being secret. There is also an expectation that the voting experience will be problem-free and that voting technologies will work correctly. However, we have increasingly read of voters complaining that the in-person voting process is not private, either because voting booths are too small and exposed to wandering eyes, or because voters often have to hand a ballot to a poll worker to have it cast.⁴

In order to identify problems with the voting process and with privacy, we asked voters in both states the following question: “Do you agree or disagree that you were able to vote in private?” Overall, 91% of voters in New Jersey and 81% of voters in Virginia “strongly agreed” with this statement. It is not obvious why Virginia voters expressed less satisfaction with their voting privacy. The difference is not due to the presence of optical scanners in Virginia, since the percentages are virtually identical for users of DREs (80.6%) and optical scanners (81.4%). These differences persist across racial groups and types of communities. The robustness of the difference across the two states, regardless of controls for community and demographic factors, suggests that the explanation lies in the details of how precincts are configured in the two states.

We also asked voters, “Have you ever had a problem when you tried to vote that kept you from voting?” In Table 6, we see that, in New Jersey, 4.6% of voters said that they had had a problem that had prevented them from voting before and 3.6% of Virginians gave the same answer.⁵ As we see in the table below, having a past problem voting or having concerns about voter privacy both affect voter confidence in a very negative manner. In New Jersey, privacy concerns lowered confidence by 19 percentage points; in Virginia, those with privacy concerns were 9.5 percentage points less confident than those who had no such concerns. Individuals who had encountered previous problems that kept them from voting were 25 and 20 percentage points less likely to be very confident in New Jersey and Virginia, respectively.

⁴ For instance, see “New N.Y. Voting System Raises Privacy Concerns,” [pressconnects.com, http://www.pressconnects.com/article/20091130/NEWS01/911300341/New+N.Y.+voting+system+raises+privacy+concerns](http://www.pressconnects.com/article/20091130/NEWS01/911300341/New+N.Y.+voting+system+raises+privacy+concerns)

⁵ Voting machine problems were rather rare in this election, occurring in less than 1% of cases in either state.

| | New Jersey | | | Virginia | | |
|----------------------|-----------------------|--------------------|----------------|-----------------------|--------------------|----------------|
| | Not/Not too Confident | Somewhat Confident | Very Confident | Not/Not too Confident | Somewhat Confident | Very Confident |
| Felt Privacy | 4.02% | 25.03% | 70.95% | 3.26% | 19.59% | 77.15% |
| Felt Lack of Privacy | 11.63% | 37.21% | 51.16% | 5.19% | 27.27% | 67.53% |
| No Past Problems | 4.02% | 26.03% | 69.95% | 3.40% | 19.80% | 76.80% |
| Past Problem Voting | 20.00% | 35.56% | 44.44% | 13.51% | 29.73% | 56.76% |

Table 6: Confidence and Privacy

7 Voting Technologies and Voting Fraud

The role of computers in casting and counting votes has been a controversial issue since at least 2002 (AH04, AH08; HNH08; St06, St09]. The controversy over electronic voting centers, in part, over a debate as to whether paper ballots or electronic ballots are easier to count, easier to use for voting, and easier to steal. We asked these questions in New Jersey and Virginia with great interest because both states have substantial DRE usage. DREs are the sole technology used for in-precinct voting in New Jersey and approximately 75% of Virginia voters use DREs in the precincts.

| | New Jersey | | | Virginia, DRE users | | | Virginia, OpScan users | | |
|-----------------------|------------|-----|-------|---------------------|-----|-------|------------------------|-----|-------|
| | OpScan | DRE | Paper | OpScan | DRE | Paper | OpScan | DRE | Paper |
| Easy to steal votes | 59% | 24% | 80% | 53% | 23% | 79% | 30% | 28% | 75% |
| Easy for disabled | 51% | 70% | 53% | 54% | 74% | 56% | 69% | 63% | 66% |
| Easy for non-disabled | 69% | 86% | 69% | 74% | 89% | 74% | 84% | 83% | 84% |
| Easy to count | 42% | 77% | 24% | 51% | 78% | 28% | 67% | 68% | 35% |

Table 7: Concern About Voting Technology, by Voting Technology Used

We asked respondents their opinions of the three major voting technologies: (1) “paper ballots that are scanned and counted by a computer,” (2) “electronic voting machines, that is, voting machines with a touch screen, like an ATM machine,” and (3) “paper ballots that are counted by hand.” For each of these technologies, we asked respondents to agree or disagree with the following statements about each technology:

1. It is easy for dishonest people to steal votes;
2. It is easy for people *with* disabilities to vote on;
3. It is easy for people *without* disabilities to vote on; and
4. It is easy for election officials to count votes accurately.

Responses to these questions are summarized in the previous table. The numbers in the cells are the percentage of respondents saying they *agree* with the statements. (Individuals saying they “don’t know” are included in the denominator.)

Compare, first, the New Jersey respondents, all of whom used DREs if they voted in-precinct, with the Virginia respondents in DRE jurisdictions.⁶ The attitudes toward the three technologies are strikingly similar. Virginians may be a little more favorably inclined toward all three technologies, but only slightly. For DRE users in both states, the superior technology is clearly DREs, followed by optical scanners and then hand-counted paper.

| Type of In-Precinct Equipment | New Jersey | Virginia | |
|-------------------------------|------------|----------|--------------|
| | DRE | DRE | Optical Scan |
| Paper ballot | 3.0% | 4.1% | 4.4% |
| Optical Scan | 6.3% | 13.6% | 40.0% |
| DRE | 82.2% | 76.7% | 48.0% |
| Don’t know | 4.3% | 2.9% | 5.4% |
| Other | 4.2% | 2.8% | 2.2% |

Table 8: Preferred Voting Technology, by Voting Technology Used

When we compare the Virginia respondents who live in counties/cities that use DREs for in-precinct voting with those who live in municipalities that use optical scanners, we see that optical scan users have a better opinion of optical scanning than the DRE users, but except for the “vote stealing” item, the differences are surprisingly small. The same can be said for opinions about hand-counted paper ballots, as well. Similarly, optical scan users have a lower opinion of DREs than the DRE users, but the differences are surprisingly small, especially given the controversy over DRE machines. These findings lead us to conclude that voters are largely supportive of what they are currently voting on, with little nostalgic pining for the lowest-tech solution, hand-counted paper ballots. We also asked the respondents “Which kind of voting machine or method would you most prefer to use?” Table 8 gives the responses to this question, broken down by state and by type of equipment use in Virginia. Again, users of DREs are happy to be using them, with New Jersey DRE users a bit more pleased with this technology than Virginians. In Virginia, the optical scan users are surprisingly split in their preference for the two major forms of voting.

Further analysis can be performed on these responses. The well-known divisions over machine choice show up in the data. For instance, liberals and highly educated respondents are more likely to oppose DREs. African Americans, interestingly enough, are more supportive of DREs in both states than are Whites.

⁶ In New Jersey, 91% of voters in our sample report voting in a precinct on Election Day. In Virginia, the percentage was 93%.

8 Conclusion

Only quite recently have scholars begun to collect and analyze individual-level data on the voting experience in the United States. The availability of detailed individual data on a voter's experience, coupled with knowledge of what voting technologies are being used by these same voters when they cast their ballots, constitutes a rich new area for research and will no doubt generate new ideas for future improvement of election administration in the United States. We clearly see that voters are sensitive to the voting experience that they have and their attitudes about the electoral process are shaped in part by the experience that they have voting.

One of the most interesting results in our analysis concerns the confidence that voters state they have that their ballot is being counted as they intended. Consistent with earlier studies of voter confidence, we find that those who cast their ballot in person on Election Day express the most confidence that their ballot is being counted as they intended; those who vote before Election Day, especially those who vote by mail, consistently report lower levels of confidence that their ballots are counted as intended. Exactly why these differences exist in our analysis and in previous studies is a question that requires additional research, since increasing numbers of voters are choosing to cast their ballots before Election Day.

We also found that when voters were asked which voting technology they would prefer to use, we found that those who currently use DRE machines to vote would like to continue using them. Interestingly, we found that optical scan voters in Virginia were deeply divided about whether they would like to continue the use of optical scan voting technology, which indicates another area for future research.

The methodology used in this study—of surveying voters about their voting experience immediately after the election—is one that can be replicated in other countries and in all electoral environments. For instance, in the 2010 parliamentary elections in the United Kingdom, there were many reports of electoral problems, such as understaffed polling places, polls that ran out of ballots, and long lines.⁷ A survey of voter attitudes can determine how such problems affect voter confidence and also identify the breadth of the problem nationwide, without having to rely solely on the media to know what occurred. For public managers of elections and for political principals, having these data can improve public management of election without having to rely solely on hearsay and media reports that are not validated with more systematic data.

⁷ <http://www.timesonline.co.uk/tol/news/politics/article7118998.ece>

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