Behavior and Error in Election Administration:
A Look at Election Day Precinct Reports

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By
David Odegard
University of New Mexico

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Abstract

Election administration can be a difficult enterprise because Election Day activities are often in the hands of thousands of volunteers with very little experience and often poor training in the laws and processes of election administration. This leads to error that can create problems for voter confidence. Anecdotally, poor Election Day administration has been tied to the ethnicity and partisanship of a precinct. These include long lines and machine failures in minority-heavy or partisan districts. Election Day incidents were documented by Bernalillo County officials, as well as by poll watchers from both partisan and independent groups. Using these data from Election Day 2008 as dependent variables and information about precinct and poll worker characteristics created from the statewide voter registration file as independent variables, I examine the relationship between precinct characteristics and Election Day incidents systematically. I find that even when controlling for the number of votes cast in a precinct and the partisanship of the precinct, both poll worker gender and ethnicity influence the prevalence of machine and administrative errors; however, there may be other confounding effects.

Introduction

The United States' ability to have smooth transitions of power from President to President is made possible, in part, by those who administer elections. Even though in 2000 and 2004 there were anecdotal reports of electoral fraud, election administrators including poll workers, volunteers, independent watchers, the major political parties, and the government are all striving for independent, free, and fair elections by not only eliminating fraud but also mitigating the technical and administrative issues that occur in precincts throughout the United States. It was estimated that 4 to 6 million votes were lost due to errors during the 2000 and 2008 election (Ansolabehere 2009). The response was that election administration needed to take seriously the important lessons from these episodes and reform for the future (Wise 2001). Therefore, Congress passed the Help America Vote Act (HAVA) to set minimal federal standards for election administration. HAVA provided nearly $4 billion for equipment upgrades and set minimal administration standards for states and local governments to follow (Atkeson and Saunders 2007). This included state voter registration files, new voting technology, and the use of provisional voting.

The backdrop for these reforms was the debacle of the 2000 election. In this contest, the focus was on Florida and the issues with butterfly ballots, incorrect voter databases, and inconsistent recount procedures. The media reported that the use of electronic voting systems in more affluent, less populous areas of Florida allowed for easier reporting; paper ballots in poorer neighborhoods created a less precise and more cumbersome Election Day experience (Perera et. al. 2000). Similarly, the use of butterfly ballots caused confusion among African American and Jewish voters who were afraid they voted for Pat Buchannan because "Gore voters, who had to match the second name on the left-hand side of the ballot with the third punch-hole in the center

of the ballot, could easily mismark their ballot" (Brady et. al. 2001, 60; also see Wand et. al. 2001) In Ohio in 2004, there were reports of 10 hour lines to vote and a lack of voting machines in predominantly African American neighborhoods (Blaming the Messengers 2005). There were also reports that machines failed to count 92,000 ballots for the presidential race alone and that there were more that were counted twice; "Glitches in new high-tech electronic machines gave Bush extra votes in at least one Ohio county and wiped out thousands of votes in others across the county" (Election Day Leftovers 2004).

The media reported that there seemed to be more issues in precincts that had a high number of minorities, a young voting population, and poorer neighborhoods in 2004. Counting errors were reported to have missed more than 12,000 ballots, resulting in nearly 10% of ballots in 10 counties not being counted in highly partisan districts. Registration confusion occurred because 80% of states did not at that time have central voter databases. Legal challenges to sometimes arcane election laws were said to have held up the political process (Election Day Leftovers 2004). But these problems were not limited to Ohio and Florida. There were reports of technical and administrative issues all over the United States, including New Mexico. In two predominantly GOP precincts in Bernalillo County, a heavily Democratic County, they ran out of ballots causing long lines and very frustrated poll workers and voters (Alvarez, Atkeson, and Hall 2007).

Thus, anecdotal evidence suggests that some election administration problems may be politically motivated, systematically attempting to deter some voters from completing their civic duties relative to other voters. Anecdotal evidence, however, may not provide an accurate picture of election administration problems and how they are distributed among the electorate. This thesis takes a systematic approach to examining these issues. I use incident reports gathered

as part of Election Day activities by the County Clerk, Common Cause, and the Obama for Change Campaign that describe anomalies and problems on Election Day as my dependent variable. My independent variables came from the Secretary of State's voter file, from which I selected Bernalillo County registered voters. Using simple cross tabulations and more sophisticated logistic modeling techniques, I systematically examine the relationship between these precinct, voter and poll worker characteristics and the presence of incident reports.

Background and Theory

Research has shown that what occurs in a voting booth matters to voter confidence. Voter confidence is a measure of an electorate's trust in the process of government and is fundamental to the legitimacy of a democratic society (Atkeson and Saunders 2007). Since voter confidence reflects a fundamental trust in the process of government, any actions that negatively affect voter confidence need to be identified. Electoral issues from 2000 that continued into 2004 were found to cause a decrease in voter confidence and possibly participation (Alvarez, Hall and Llewellyn 2008). Similarly, Atkeson and Saunders (2007) found that a voter's experience and their attitudes about the election process influence their voter confidence. For example, the helpfulness of poll workers, problems at the polls with registration, or a confusing ballot reduces voter confidence.

Anecdotal evidence suggests that voters' experiences may differ not due to random events but due to the characteristics of voters, poll workers, precinct voters or administrators. For example, election administrators may strategically place more election resources in areas more supportive of her party and fewer election resources in areas less supportive of her party in an effort to affect voter turnout on the margins. Since election officials in Bernalillo County are members of the Democratic Party, this could favor a better voting environment for some voters, namely Democrats, than others. Similarly, Republican administrators may make sure to place the

highest quality equipment in Republican precincts and under-serve Democratic precincts potentially reducing the rate of voting. A report filed by the Democratic National Committee after the 2004 election found that there were resource availability discrepancies in Ohio, but concluded this did not affect the outcome of the election. Nevertheless, machine problem frequency was higher in predominantly black neighborhoods, and precincts with more new voters (Dao 2005). In St. Louis, a lawsuit was filed to extend the voting hours in the 2000 election as it was found that precincts with a high number of black voters were having issues with crowding due to a lack of available machines (Ayres 2001).

In Florida, the ethnic breakdown of a precinct affected ballot rejection rates. Black voters, especially in minority precincts, had much higher rejection rates when compared to non-blacks in the 2000 election (Lichtman 2003). In Los Angeles, poorly marked precincts were more prevalent in lower income and minority neighborhoods (Barreto, Marks and Woods 2004). The lack of adequate parking or the poor marking of the location is a barrier and added cost to the voting process. Also these barriers may not stop at the doors of a precinct and could include long lines, a lack of machines, or an inadequate number of ballots. Others have suggested that the available resources of a precinct also influence voter turnout (Highton 2006). In the 2000 and 2004 elections, anecdotal media reports noted that election administrators were putting old machines with a high level of known problems into precincts that had a high percentage of minority voters or new voters (Dao 2005).

Systematic evidence has not been provided to show that partisanship of the local election administrator mattered. However, party affiliation of election administrators has been shown to matter in other areas suggesting it could be an important variable here as well. For example Kimball, Kropf and Battles (2006) found that, in the 2004 election in a partisan district, a

Republican voter was more likely to have his or her provisional ballot counted under a Republican election official.

Alternatively, the cause of differences may not be due to systematic discrimination on the part of the election official, but to differences in the training and capabilities of individual poll workers to perform their job well. We know from previous research that the events in the polling place influence voter confidence (Atkeson & Saunders 2007). Thus, poll workers play a crucial role in administering elections; they are the street bureaucrats interacting with voters and as such are the face of government. If they received faulty training or were inadequately prepared for Election Day problems, this could lead to more problems on Election Day, ultimately decreasing voter confidence (Atkeson & Saunders 2007). To begin with, there are several issues with training poll workers. On-the-job training is hard because of the nature of a one-day experience (Hall, Monson and Patterson 2007). Poll workers are taught in a setting different from what they will be in on Election Day and face many variables unknown during the training.

Alvarez and Hall (2006) outlined several reasons why election administration is difficult and current training and selection methods are flawed. To administer an election local election official must delegate authority to a large number of volunteer poll workers, many of whom are unqualified (Alvarez and Hall 2006, 494). Delegation of authority creates problems for monitoring. The combination of many unqualified poll workers and the inability to monitor poll site activities affects the overall success of the election as poll worker discretion leads to the potential for unequal treatment of voters by poll workers (Alvarez and Hall 2006). Since poll worker training is a difficult process and the available mechanisms to choose and monitor qualified volunteers are non-existent, it is possible that not only are poll workers taking different lessons and skill sets away from the same training, but they are also applying them differently.

In addition, because precinct judges wield absolute power in their own precinct they can alter the voting process to reflect their own values. For example, Republicans are more worried about voter fraud, which includes voting more than once (Leibshutz and Pallazoo 2005; Ansolabehere and Persily 2008). The partisan differences in voting process may lead Republican poll workers to interpret the law more broadly and institute procedures that identify every voter with a photo ID, albeit incorrectly, leading to incorrect voting procedures and irregularities across precincts (Atkeson et al 2009). More importantly, precinct to precinct irregularities may lead to systematic differences in incidents.

Finally, a voter's experience is likely to be shaped by the misuse of poll worker authority. Poll workers operate as an extension of the government to administer elections (Hall, Monson and Patterson 2008). The interactions that poll workers have with voters influences the confidence that voters have on the electoral system (Hall, Monson and Patterson 2008; Atkeson and Saunders 2007) A voter's experience may differ also due to poll workers misusing their authority as street level bureaucrats (Lipsky 1980). These street level bureaucrats could make decisions that affect certain groups differently, using discretion during the election to solve problems that affect a voter's experience. Thousands of local officials and volunteers manage elections in the United States, and although they are bound by state and federal laws, their implementation of these laws varies (Kimball, Kropf and Battles 2006). During this implementation, critical decisions are made that determine aspects of the environment in which voters vote. This in turn has a profound effect on voter confidence.

One way to examine this problem is by the use of incident reports. Kiewiet et. al. (2008) did a study of election incidents during the 2004 election in Cuyahoga, Ohio. Although they were concerned about voting machine security and tampering, they also studied administration

error in the hopes of assuring voters that they are participating in a fair election. The researchers were investigating whether incidents were systematically or randomly associated with precinct characteristics. Using incident logs as reported by poll workers to local election officials, the researchers found that there is a difference in the frequency of certain incidents reported depending on the party affiliation of voters. Democrats were more likely to report problems with poll workers while Republicans were more likely to report voter registration errors. In the end, they did not find any strong determinants of election incidents, suggesting that there was no evidence of a systematic bias.

However, this was one case, in one local jurisdiction. More systematic studies of incidents are needed to determine if the especially anecdotal evidence has merit or is simply selective reporting. If election incidents were distributed evenly or randomly across a set of precincts, then an elected official's partisanship, a poll worker's training, or poll worker's Election Day discretion should not have bearing on incident reports. However, some research and especially anecdotal evidence suggests that there could be more systematic problems. As these theories suggest, because of the role that election officials and poll workers play in the process, there are voter and poll worker characteristics that predict the prevalence of Election Day incidents.

My normative hypothesis is that it should not matter what precinct a voter casts a ballot in, but anecdotal evidence suggests otherwise. Even though there have been major steps, including HAVA, to allay administration issues, problems in the 2000, 2004, 2006, and 2008 elections suggest that there are still electioneering problems that might influence the presence of frequency of Election Day incidents.

Data and Methods

The data I use come from Bernalillo County, New Mexico during the 2008 general election. Bernalillo County is an excellent place to examine this question because of its size and diversity. The county has 423 precincts that range in size from 47 to 4,027 voters. It has more than 390,000 registered voters and 28,620620 (according to statewide canvass) voters cast ballots for the presidential race in 2008. Of the votes cast, more than 81,000 or about 29% of those ballots were cast on Election Day. President Obama won Bernalillo County, garnering 60% of the total votes cast. Half of the registered voters in Bernalillo County are Democrats, about 30% of registered voters are Republicans, and the other 20% are either registered with minor parties or declined to state their party affiliation when registering to vote.

State law mandates that the counties keep detailed records of voter, machine, and administrative incidents on Election Day. The Republican Party, the Democratic Party, and Common Cause also collected information about incidents that occurred.[1] If a precinct had issues throughout the day because the vote tabulator would not accept ballots, voters were having problems completing their ballot, or there was a lack of supplies, those errors were captured in incident reports filed by major political parties or campaigns, the state and non-partisan election monitors. I use a count of the type of incidents reported as my dependent variable as they are the best record of Election Day problems and are easily matched to the precinct in which they occurred. Table 1 lists and explains the different types of incidents occurred.

Each incident reporting agency had a different way of collecting this information, but incidents were calculated by description to determine what happened on Election Day. I

[1] Although the Republican Party and Senator McCain's presidential campaign collected information on election administration, the recorded incidents have since been lost and were not saved electronically. Thus, these records are not included in this analysis.

aggregated these incidents into three major categories because of their similarities. Voter incidents directly affect a voter. This includes asking for photo identification when none is necessary or other issues that keep a voter from casting a ballot. Machine incidents relate to both malfunctions and a lack of printer cartridges, and administrative incidents were records of problems with a specific poll worker, a lack of supplies, and other precinct problems that influence election administration.

Table 1
Incident Category Descriptions

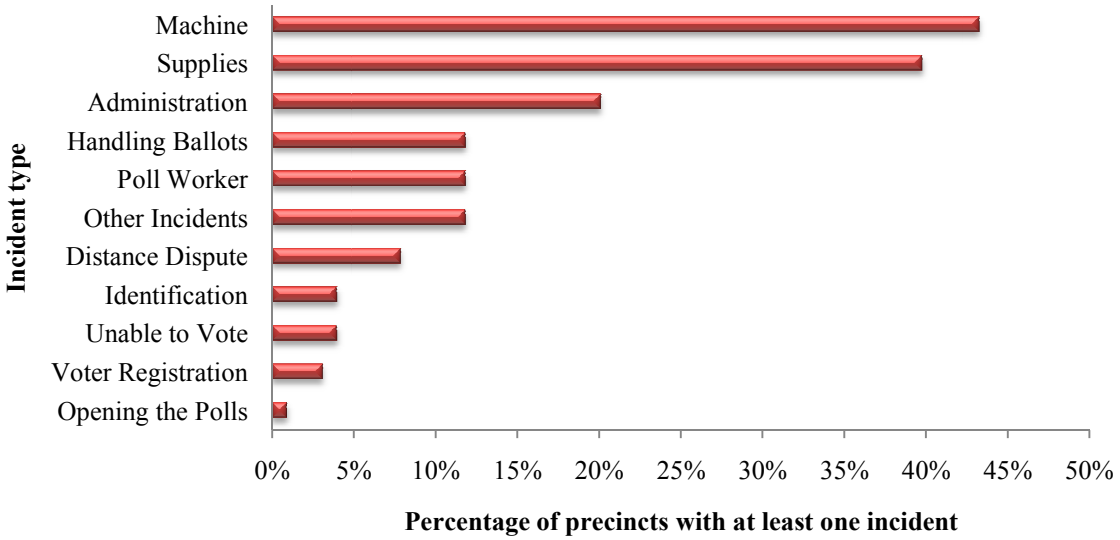
Voter Incidents	
Handling Ballots	The poll worker was incorrectly handling a ballot either when spoiling a ballot, assigning a provisional ballot, or refusing to accept an absentee ballot
Identification	The poll worker was improperly requesting identification and barring voters from voting
Unable to Vote	The voter was not allowed to cast a ballot
Voter Registration	The voter was either not registered at that location or not registered at all
Machine Incidents	
	Includes any incidents related to a lack of printer cartridges, tabulator malfunctions, and seal tampering
Administrative Incidents	
Administration	Usually an incorrect use of the voter rolls including not using them correctly or denying poll watchers and challengers view or problems reconciling final ballot counts
Distance Dispute	Groups campaigning within 100 feet of the polling location, or lawyers within 50 feet
Opening the Polls	The precinct failed to open on time
Poll Worker	Poll workers cited as incorrectly administering the election
Supplies	A lack of supplies, including ballots

Election Day incidents focus on difficulties that were encountered in conducting the balloting and are not elaborate reports; their usefulness is in indentifying ways to undermine voter confidence or discouraging voters from voting (Kiewit et. al. 2008). As such, incident

reports are an important resource in capturing voter and poll worker activities throughout Election Day.

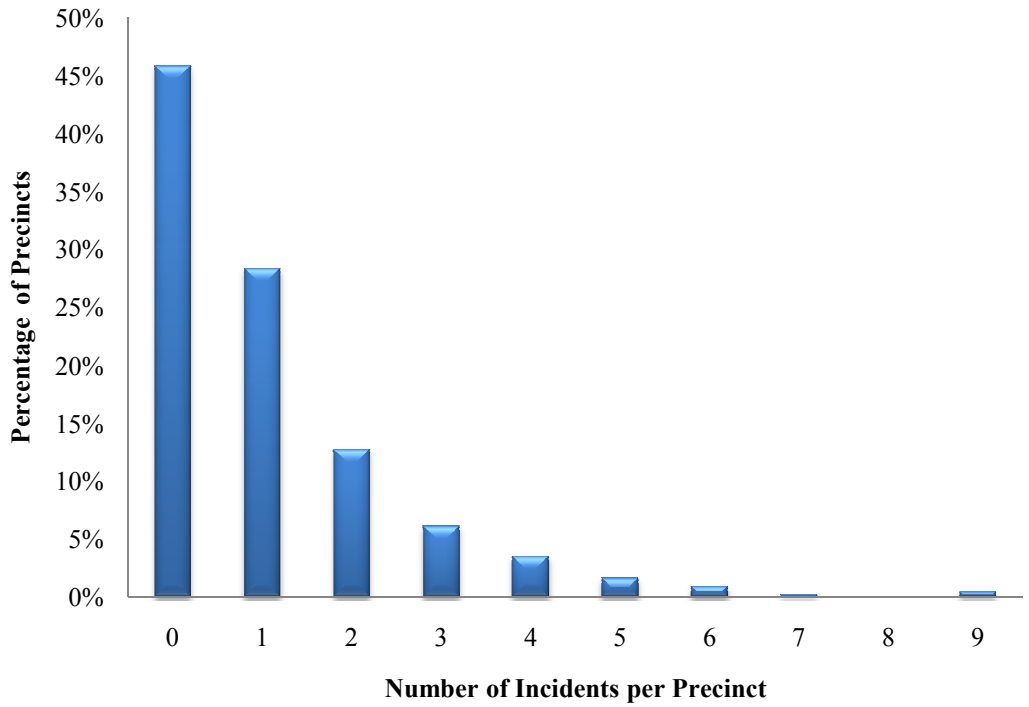
The County Clerk collected 344 incident reports from a phone bank set up to support poll workers. The Obama for Change Campaign had poll watchers and challengers at precincts around Bernalillo County. They reported 80 incidents that could be identified with a specific precinct. A few reported errors dealt with problems throughout the county and were not counted for my analysis here. Common Cause provided a phone line for voters to report incidents and 26 of those incidents had identified a precinct in which the incident occurred. Figure 1 shows that the data collected from each of these groups was coded depending on the incident type and grouped by precinct. Of the 423 precincts in Bernalillo County, 46% had at least one incident report, while only 1% had a problem opening the polling location. 9% of polling locations logged a dispute with either a campaign or a lawyer being too close to a precinct. 40% of precincts were lacking some type of supply. This was documented either when the poll was opened or when supplies ran out throughout the day.

Figure 1: Frequency of Incident Types



As Figure 2 shows, 46% of precincts did not have a recorded incident. However, of precincts that did, most have at least one incident. However, the frequency also shows that about 20% of precincts in Bernalillo County had 3 or more incidents. Two precincts in Bernalillo County had a disproportionate number of incidents during the last election, reporting 9 incidents. Problems with machines, poll worker error, and voter id issues were among the incidents reported. Poll worker and voter characteristics were derived from the Secretary of State's voter registration file, which identified voters' precincts and basic information including dates of birth, party affiliation, gender, and when the voter first registered to vote. Neither the county nor the state keep or collect information on voter ethnicity, but I used the Census Bureau's method for using surnames to identify whether or not a voter is Hispanic (Word and Perkins, 1996). Having the voter data, I aggregated this information to the precinct level as Table 2 shows.

Figure 2: Incident Reports by Precinct



Having dates of birth for the voters allowed me to identify the average age of the voters in each precinct. I was also able to calculate the percentage of men and women, the percentage of Hispanic voters, and the partisanship percentages for each precinct. During the aggregation, I made sure to determine the total numbers of voters who voted in the precinct on Election Day as well as the number of voters that registered after the 2006 election. The Bernalillo County voter registration file did not have the number of votes cast, but using a canvass after the 2008 election, I was able to determine this information and add it to the overall dataset on precinct and voter characteristics. Table 2 also shows the variance between precincts in Bernalillo County. The size of a precinct and the number of votes cast varies greatly as does the number of new voters. The voter characteristics, including the percentage of men and women, as well as the percentage of Hispanic voters in each precinct also varied substantially, depending on the precinct. For example, the most Hispanic precinct was 75% Hispanic, while the least Hispanic was only 3% Hispanic. The percentage of registered Democrats and Republicans varied greatly as well.

If a relationship between voter characteristics and incident reports exists, each of these measures would influence incident reports for different reasons. First, I would expect that the number of new voters would influence incident reports because they are inexperienced with the Election Day process, which likely would lead to increased administrative or machine problems and hence incidents. New voters would either not be as confident and rely more on poll workers, or would because of inexperience, be at an increased risk of making a mistake with their ballot, filling it out or feeding it into a tabulator incorrectly. In addition, the overall number of votes cast in a precinct will be expected to have a similar influence on incident reports as new voters; the

more votes cast, the more stress on precinct administration and thus an increased risk of incidents.

Table 2
Voter Characteristic Frequency by Precinct

Characteristic	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Precinct Size	931	502	47	4027
Number of New Voters	168	141	0	1376
Number of Votes Cast	192	101	1	835
Percentage Hispanic	26%	16%	3%	75%
Percentage Male	47%	3%	36%	67%
Percentage Democrat	49%	11%	15%	72%
Percentage Republican	31%	13%	8%	62%
Percentage Independent	20%	4%	10%	37%

The percentage of Hispanic voters is not expected to have an effect on incident report frequency and neither is voter partisanship. However, if there is some relationship, this could be indicative of a group of poll workers or elected officials trying to influence the outcome of the election. Research has shown that there have been some attempts to reduce certain groups access to the polls (Barretto Marks and Woods 2004; Lichtman 2003). And as Kimball, Kropf and Battles (2006) identified, election workers are more likely to accept ballots from members of their own party. Since the County Clerk and other election officials in Bernalillo County are Democrats, Republicans will be more likely to report incidents because of a decreased likelihood of their votes being counted.[2] Based upon this anecdotal and scientific evidence, I suggest that precincts with more Hispanic voters, Republican voters, new voters, and votes cast on Election Day will correlate positively with incident frequency.

I also examined the relationship between poll worker characteristics and precinct incidents. To characterize poll workers, I used a similar process to the one I used for voters. I

[2] Differences related to precinct gender will not be tested because of the lack of variance in this measure across precincts.

received a list of the poll workers from Election Day from the Bernalillo County Clerk's office. This file included information on which precinct the poll worker was assigned to and what position they held. Each precinct had one presiding judge and 4 to 6 other poll workers. This data file also included each poll worker's unique voter identification number as assigned to them by the state voter system file. I merged basic demographic data from the voter registration file with the poll worker file to get a complete picture of each poll worker's characteristics and where they were stationed on Election Day. I aggregated this data to the precinct level, which allowed me to look at the set of poll workers as a whole and compare poll worker characteristics to the incidents that occurred.

Table 3 shows the variation in poll worker characteristics between precincts. The average age of a poll worker is about 10 years older than that of an average voter in Bernalillo County. The average percentage of male poll workers in a precinct was much smaller than the percentage of females. Levels of poll worker partisanship were different across the precincts, but a much smaller proportion of independent voters worked the polls on average, but this varied as one precinct had a set of poll workers in which 57% were not affiliated with the Republican or Democratic Parties. The Presiding Judge's characteristics are included with the other poll workers because their characteristics are strikingly similar to the other poll worker's characteristics. The only major difference was that there are more male Presiding Judges (47%), compared to the average number of male poll workers in a precinct (33%).

As the literature suggested, there are different reasons why poll workers would influence Election Day incident frequency. Partisanship in particular is documented as a possible reason why incident frequency would change (Kimball, Kropf and Battles 2006). Poll worker age could also lead to more error. Older poll workers have a knowledge base and experience level that

could help to resolve problems that arise throughout the day. Gender and ethnicity will also be tested for because different groups of poll workers may interact with voters differently. Men and women could ask for identification in different ways. The same could be true between White and Hispanic poll workers.

Table 3
Poll Worker Characteristic Frequency by Precinct

Characteristic	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Average Age	58	8	29	78
Percentage Male	33%	17%	0%	86%
Percentage Hispanic	29%	24%	0%	100%
Percentage Democrat	59%	17%	14%	100%
Percentage Republican	33%	17%	0%	86%
Percentage Independent	8%	11%	0%	57%

Based on this argument, I expect that partisanship, age, gender and ethnicity will have an effect on incident frequency. These are bureaucrats and their actions influence a voter's experience at the polls and, in turn, voter confidence. Any correlation between poll workers and Election Day error should be investigated.

The main question is which of these precinct and poll worker characteristics correlate with reported election incidents. Using the incidents collected, I compare each characteristic to whether or not any incident took place and examine incidents by the three categories shown in Table 1. Each error category has different implications for election administration and improvement for a better process. Because of the incident report distribution, I decided to collapse my dependent variable into a simple binary variable representing whether or not the precinct had an incident. This variable is coded 0 for no incident and 1 for 1 or more incidents. I also created three other dependent variables that identified whether or not a precinct had a specific type of incident: voter, machine, or administrative.

Using these precinct and poll worker characteristics, this paper will compare each of them to both incidents in general and each of the three incident categories in both bivariate correlations and in cross tabulations. Any precinct or poll worker characteristics that are individually significant in determining the incident frequency will be tested in logistical models to control for possible confounding effects and find which characteristics are the most influential.

Results

Table 4 shows bivariate correlations between incident reports and poll worker and voter characteristics. The number of new voters, the ethnic breakdown of a precinct, the number of voters, and the partisanship makeup of a precinct correlated significantly with whether or not precincts had incidents. The table shows that all of these correlations were weak, but nonetheless significant. The number of new voters had the weakest correlation but still shows that as the number of new voters increases, so does the likelihood of having any type of incident. The percentage of Hispanic voters, the number of votes cast, and the percentage of Democrats in a precinct were all positively correlated with incident frequency. Unexpectedly, the percentage of Republicans was negatively correlated with all incidents and was the strongest correlation with all incident reports.

None of the precinct variables were significantly correlated with voter incidents. Only one precinct characteristic was significantly correlated to machine incidents. It is expected that the number of votes cast will put pressure on the system and the bivariate correlation shows that it influences the number of machine errors. As seen in other projects with the same machines (Atkeson et. al. 2008), the more votes cast, the more stress there is on the system. This is an important and expected significant correlation.

Finally, the number of new voters, the number of votes cast, the precinct partisanship makeup, and the ethnicity makeup of a precinct had significant correlations especially with administrative incidents. As seen in the correlations between precinct characteristics and all incidents, the partisan makeup of a precinct is significantly correlated with incident report presence; however, they are weak correlations. The administrative incident correlations are much more robust than all general incidents because of the lack of correlations with the other incident categories.

The percentage of Hispanic voters was correlated with administrative incidents at the 0.182 level, which is weak, but highly significant. The number of votes cast was less significant than it was with machine incidents. This may demonstrate the influence the number votes has on the system is focused around the machines rather than the individuals working the polls.

Table 4
Bivariate Correlations

		Incident Categories		
Precinct Characteristics	**All Incidents**	**Voter**	**Machine**	**Administrative**
Percent Male	-0.012	-0.035	-0.027	0.033
Percentage of New Voters	0.091 *	-0.006	-0.048	0.178 ***
Percent Hispanic	0.119 **	0.052	0.010	0.182 ***
Number of Votes Cast	0.118 **	0.020	0.120 **	0.083 *
Percent Democrat	0.111 **	0.067	-0.040	0.186 ***
Percent Republican	-0.125 ***	-0.064	0.058	-0.227 ***
Percent DTS	0.089 *	0.023	-0.063	0.179 ***
Percent Other	0.035	-0.003	-0.052	0.139 ***

		Incident Categories		
Poll Worker Characteristics	**All Incidents**	**Voter**	**Machine**	**Administrative**
Percent Male	-0.042	0.012	-0.165 ***	0.074
Average Age	-0.044	0.052	-0.019	-0.114 **
Percent Hispanic	0.104 **	0.083 *	-0.012	0.151 ***
Percent Democrat	0.013	0.060	-0.026	0.011
Percent Republican	-0.038	-0.074	0.012	-0.056

*(P < .10), **(P<.05), ***(P<.01)

Table 4 also shows the correlations between incident categories and poll worker characteristics. The poll worker characteristics showed weaker correlations in general, but a couple of characteristics may be intrinsic to predicting incident reports. First, unlike most of the precinct characteristics, only a few poll worker characteristics are correlated with incident presence in a precinct. For example, the negative correlation between the percentages of male poll workers within a precinct and the prevalence of machine incidents is the only significant relationship in incident category.

Poll worker ethnicity has very significant correlations to administrative incidents; the more Hispanic poll workers in a precinct, the more administrative errors within a precinct. The correlation between the percentage of Hispanic poll workers and all incidents as well as with voter incidents is significant, but the correlation is weaker than between ethnicity and administrative incidents.

Age was also significantly correlated with the number of administrative incidents, and in a similar direction as other election administration studies have shown (Atkeson et. al. 2008). This suggests that there is less error as the average age increases. The poll worker characteristic that was not correlated at all with incident reports was the partisan makeup of the poll workers. It did not matter whether or not the poll workers were Democrats or Republicans; it did not affect the presence of any type of incident.

The precinct characteristic that I believed was most likely to influence incident reports was the number of votes cast. The bivariate correlations showed that this is significantly correlated with every incident type except voter incidents. Table 5 is a set of cross tabulations for some of the precinct characteristics that were significant in the bivariate correlations. Other studies on election administration (Atkeson et. al. 2008) have shown that, with the increase in

ballots cast, there is more stress on the voting system and an increased likelihood of a machine problem. The smallest precincts had less than 150 voters where poll workers throughout the day are only seeing a voter every 5 minutes. These precincts would have a much different feel than precincts that had more than 300 voters where both poll workers and tabulators have an average of a voter every 2 minutes or less. Between these two groups, the proportion of precincts with errors overall increased by 17.4%. Each of the incident categories displays the same trend. There is a higher likelihood of having incidents when processing a larger number of voters.

Table 5 also shows a cross tabulation with partisanship and party competition. Partisanship, especially the percentage of Democrats and Republicans, were significantly correlated with the prevalence of incidents in general and with administrative incidents. The cross tabulations break down precincts into five categories and shows that as a precinct becomes more Republican, the less likely the precinct is to have an administrative incident. Republican majority precincts are about 25% less likely to have an incident than are heavily Democratic precincts.

To confirm that there is not something intrinsic about party competition, where plurality precincts will be more likely to have an incident, a cross tabulation of incidents in plurality districts and majority party precincts shows that majority Democratic precincts have a higher proportion of incidents than do Democratic plurality precincts. Although there are not any trend changes between each incident type, there is a marked difference between the prevalence of incidents in majority and plurality precincts with more than a 10% difference between the proportions of administrative incidents. There does seem to be a strong relationship with voter partisanship and incidents in precincts with a higher proportion of registered Democrats are more likely to have Election Day incidents.

Table 5
Incident Frequency and Precinct Level Characteristics
(Total Precincts)

Election Day Votes Cast

	<150	*150-300*	*>300*
	(164)	(200)	(59)
Voter (47)	9.8	11.5	13.6
Machine (99)**	18.3	24.5	33.9
Administrative (147)	30.5	36.5	40.7
Total (229)**	47.0	57.0	64.4

Party Control

	Heavily Democratic >60%	*Democratic Majority 50%-60%*	*Democratic Plurality 40%-50%*	*Republican Plurality 40%-50%*	*Republican Majority >50%*
	(94)	*(108)*	*(114)*	*(73)*	*(28)*
Voter (47)	11.7	13.9	9.6	9.6	10.7
Machine (99)	22.3	23.1	21.9	24.7	28.6
Administrative (147) ***	39.4	47.2	29.8	28.8	14.3
Total (229) *	58.5	62.0	46.5	56.2	39.3

Party Competition

	Majority	*Plurality*
	(230)	*(187)*
Voter (47)	12.6	9.6
Machine (99)	23.5	23.0
Administrative (147)***	40.0	29.4
Total (229)*	57.8	40.3

Percentage of Hispanic Voters

	< 40%	*40% -55%*	*>55%*
	(340)	*(45)*	*(38)*
Voter (47)	9.7	17.8	15.8
Machine (99)	22.6	22.2	31.6
Administrative (147)***	30.9	46.7	55.3
Total (229)***	50.3	64.4	76.3

*(P < .10), **(P<.05), ***(P<.01)

The final precinct characteristic in table 5 is ethnicity. Although the proportion of precincts with voter and machine incidents did increase as the percentage of Hispanic voters increased, it was not a strong trend. However, Table 8 confirms what was found in the bivariate correlations that the proportion of precincts with administrative incidents with ethnicity. Precincts with more than 55% Hispanic voters were nearly 25% more likely to have an

administrative incident than those precincts with less than 40% Hispanic voters. A similar increase is seen with administrative incidents.

Overall, the presence of Election Day incidents as well as each incident category was compared to precinct characteristics that were significant in a bivariate correlation, and looked at further in cross tabulations. As expected, the possibility of precinct incidents increased with the number of votes cast. Although this was only significant with machine incidents and total incidents, there was still a positive trend between the number of votes cast and both voter and administrative incidents. It seems that more votes create some type of stress on all facets of the Election Day process. The bivariate correlations also suggested that more Republican precincts would have a lower likelihood of incidents and the cross tabulation confirmed that. Furthermore, plurality precincts were not more likely to have incidents. Finally, as the percentage of Hispanic voters increased, so did the likelihood of having any type of incident and specifically, an administrative incident.

Table 6 looks at the three significant poll worker characteristics from the bivariate correlations (Table 4). The data on poll worker ethnicity and incident reports shows that precincts with fewer Hispanic poll workers were less likely to have incidents and this was very significant both for incidents in general and administrative incidents. Only half of precincts where less than 40% of their poll workers are Hispanic had administrative incidents, which is 8.4% less than precincts where more than 50% of their poll worker are Hispanic. This suggests that there is a difference, but precincts with around half of its poll workers being Hispanic are the most likely to have incidents. The fact that there is a difference in the likelihood of precinct incidents depending on the percentage of Hispanic poll workers in a precinct is important. These results are similar to what was found with Hispanic voters. Because of a high correlation

between the percentage of Hispanic voters and the percentage of Hispanic poll workers, there are confounding effects that make it unclear whether it is the ethnicity of the voters or the poll workers that influences Election Day Incidents.

Table 6
Incident Frequency and Poll Worker Characteristics
(Total Precincts)

Percentage of Hispanic Poll Workers			
	< 40%	*40% -50%*	*>50%*
	(280)	*(54)*	*(89)*
Voter (47)	9.6	11.1	15.7
Machine (99)	23.2	25.9	22.5
Administrative (147)***	29.6	55.6	38.2
Total (229)**	50.0	68.5	58.4

Average Poll Worker Age			
	<50	*50-65*	*>65*
	(62)	*(278)*	*(83)*
Voter (47)	6.5	11.5	13.3
Machine (99)	32.3	22.3	20.5
Administrative (147)**	48.4	33.5	28.9
Total (229)*	64.5	54.0	47.0

Poll Worker Gender (Percentage Male)			
	< 40%	*40% -60%*	*>60%*
	(245)	*(159)*	*(19)*
Voter (47)	10.6	11.3	15.8
Machine (99)*	27.3	18.9	10.5
Administrative (147)	31.8	39.0	36.8
Total (229)	54.7	54.1	47.4

Presiding Judge Gender		
	Female	*Male*
	(224)	*(198)*
Voter (47)	10.7	11.6
Machine (99)**	27.2	19.2
Administrative (147)	34.8	34.8
Total (229)	55.8	52.5

*(P < .10), **(P<.05), ***(P<.01)

Poll worker age is also significant in predicting the presence of administrative incidents. As the average age of a poll worker increases, the likelihood of administrative incidents decreases. A trend, although not always significant, is seen for every other type of incident report as well. When the average age is 50 or less, a precinct is 12% more likely to have an

administrative incident than when the average age is 65 and over. However, when comparing the average age of poll workers in a precinct, when the average is 50 or less, a precinct is 6.8% less likely to have a voter incident than when the average age is 65 and over. Overall, a precinct is more likely to have any type of incident if the average age of the poll workers is lower.

The most striking poll worker characteristic is gender and its relationship to machine incidents. It has no relation to any other type of incident prevalence, and although it is highly significant in the bivariate correlations, the chi square for the cross tabulation as seen in Table 6 shows a smaller level of significance, however, the change from each category is striking with precincts that had less than 40% male poll workers being 17% more likely to have a machine incident than those precincts with 60% of its poll workers being male. Furthermore, the final cross tabulation in Table 6 shows that the same relationship is seen with the gender breakdown of presiding judges.

These cross tabulations support the original findings that poll worker gender has a significant correlation with specifically machine incidents. Other presiding judge characteristics including ethnicity and partisanship did not have similar trends as either the poll worker characteristics or the precinct characteristics, and similarly, the significant poll worker characteristics did not follow the trends seen in the precinct characteristics. The prominence of poll worker gender as a predictor for machine incident prevalence within a precinct could also have confounding effects with other significant precinct trends, specifically the number of votes cast, which showed strong correlations with incident frequency, and the partisanship breakdown within a precinct.

The logistic regression model was not used to best explain the frequency of machine incident reports, but instead to further test the strength of poll worker gender as a predictor of

machine incidents. The model showed that when controlling for the number of votes cast, precinct partisanship, and poll worker gender, the only variable that became insignificant was partisanship, which was not the strongest predictor of machine incidents to begin with. This suggests, however, that there is some strength to poll worker gender as a predictor of machine incidents.

Logit for Machine Incident Frequency

Prob > Chi ^{2}: 0.000
Pseudo R^2: .0463

	Coefficient	*Std. Err.*	*P Value*
Votes Cast	0.003	.001	.006
PW Gender	-2.559	.731	.000
% Republican	4.286	3.098	.167
% Democrat	4.341	3.609	.229
Constant	-4.494	2.777	.106

Discussion

More research must be done to look at what influences incidents at the precinct level and in turn what influences incident reports have on the overall election system, but precinct and poll worker characteristics do seem to influence incident report frequency. As shown, there is evidence of some bias, but the evidence is weak and does not necessarily implicate local election officials in influencing the process, but instead suggests that something intrinsic about poll workers or their training is changing the frequency of incidents. Some Election Day issues can, however, be mitigated by taking steps to ensure that volunteers have the tools that they need to properly administer an election; the fact that there were poll worker characteristics that influenced the frequency of incident reports may be a sign of election implementation problems.

First, having taken the poll worker training in Bernalillo County, I can attest to the limited amount of time spent with Election Day technology. A poll worker's experience may be limited to less than an hour with the vote tabulator under unrealistic conditions. The County

Clerk, because of chain of custody issues, will not allow the use of ballots when training on machines. If there was a way to furnish poll workers with problems similar to those they will encounter and the knowledge to overcome those issues, these Election Day scenarios may help decrease problems, especially machine incidents.

Finally, with the ever-changing election administration landscape, it is hard for voters to have clear expectations about the voting process. This leaves them heavily reliant on poll workers who themselves may not have all the answers. There is merit to improve outreach to areas that may be prone to more problems about Election Day administration. This would better prepare voters, leaving them less reliant on volunteers and might possibly have an effect on voter confidence.

Conclusion

My hypotheses that some precinct and poll worker characteristics can predict precinct incident reports were in some ways supported and in some ways still inconclusive. None of the correlations on their own were strong enough to conclude that the frequency of presence of incidents was influenced solely by any precinct or poll worker characteristics. There is still much that is unknown about what causes incident reports. However, there are several precinct characteristics that did show a significant correlation. As expected, the more voters, the more likely a precinct is to have incidents. This may indicate that the added stress on election administration creates more issues on Election Day. At the same time, there is support for precinct partisanship playing a role in incident report frequency in 2008 Election Day activities, and precincts with a higher percentage of Hispanic voters did have a higher likelihood of having incidents. This suggests that a precinct's ethnic breakdown does in fact have bearing on election

administration success. However, it is unclear whether this is due to poll workers or voters as I could not disentangle these effects.

As for poll worker characteristics, there were some mixed findings with partisanship and ethnicity, especially when comparing poll workers with each precinct's presiding judge's characteristics. But one of the most interesting findings was with poll worker and presiding judge gender. Each showed, as in the bivariate correlations, that the fewer male election administrators, the more likely a precinct was to have machine errors. And when controlling for the number of votes cast, this was significant; however it is still possible that other confounding effects are influencing this correlation. One suggested to me was that there may be a difference in how comfortable male and female poll workers are with technology. However, poll worker data indicate this not to be the case ($p > .05$, two tail test, data not shown).

Other problems may lie, however, with incident reports themselves. The incident reports are somewhat troublesome because they are self-reported by voters, poll challengers and poll workers. There are not set guidelines on what needs to be reported and what is not an incident. Therefore, the findings may be confounded by the fact that certain individuals, especially individual poll workers, may report incidents more systematically while others may not. For example, women may be more likely to report a machine error than men, which could result in the finding we see here.

A lack of experience with the equipment may be an important factor in differences seen here and may be mitigated by education. As shown, there are more incidents reported in precincts with more Hispanic poll workers. This difference may have less to do with the race of the poll workers and more to do with differences in education. A difference in education may affect what a poll worker obtains from training. Hispanic poll workers are significantly less

educated than non-Hispanic poll workers ($p < .05$, data not shown). Thus, better training may help improve performance across all groups, but may be particularly important for less educated poll workers. Given that the pool for poll worker selection is quite small (Alvarez and Hall 206), better training may be key is erasing the small differences we find here.

Although I have not found other explanations for the correlations, out of the three suggested by the literature and there not being a true partisan bias in the results, gaps in training between certain poll worker groups seems the most likely to explain why certain poll workers were more likely to have incidents. My normative hypothesis that none of the poll worker or precinct characteristics influenced error was not supported. However, certain characteristics had only a small effect on certain incidents. Overall, the data does not suggest that incidents have impinged on voter's right to vote, but voter confidence may have suffered as a result of more problems on Election Day. More systematic analyses of these types of data over time and across jurisdiction would help to better determine if what influences incident reports and how Election Day incidents influence the voter.

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