

Chapter 11

Voting Equipment Malfunctions

The U.S. Election Assistance Commission (EAC) sought information in the Election Day Survey about voting equipment malfunctions that occurred at the November 2004 general election. The survey asked state election directors to identify by county and precinct, if available, where any of the following malfunctions occurred and whether the affected voting machines were returned to service:

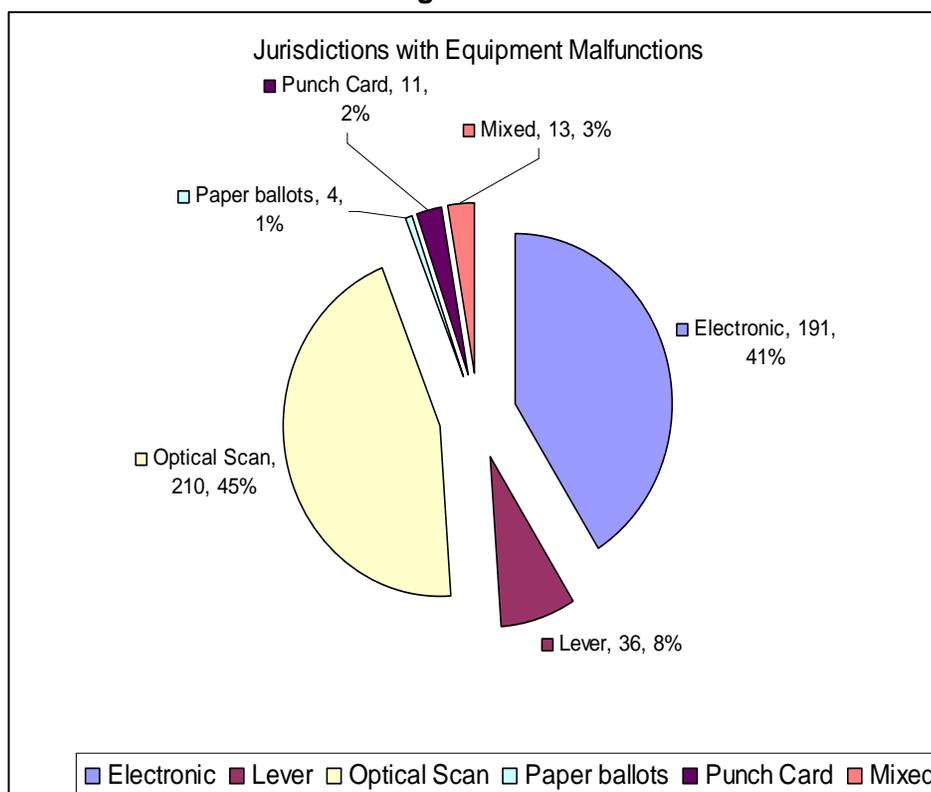
- 14a. Power failure
An interruption or failure that renders a voting machine incapable of counting votes for more than five minutes during Election Day, absentee, or early voting.
- 14b. Broken counter
A malfunction of a lever voting machine that renders the machine incapable of counting additional votes on any votable position.
- 14c. Computer failure
A software, hardware, or firmware malfunction, disablement, or interruption that renders a voting machine incapable of presenting the ballot, recording votes, or printing or tabulating results.
- 14d. Printer failure
A malfunction or interruption of the printer hardware, software, or mechanical components constituting the mechanism for creating a printed result of all contests voted (includes printers on electronic and mechanical lever voting machines).
- 14e. Screen failure
A malfunction or interruption of the screen display or indicator lights on an electronic voting machine (DRE) that renders the machine incapable of indicating which choices a voter has made or which races for which the voter is eligible to vote.
- 14f. Fatal damage to machine
Damage to or destruction of a voting machine that renders the machine incapable of recording votes or printing the results of voting.
- 14g. Modem failure
A malfunction or interruption of a modem or the computer hardware or software using a modem to transmit election results to a central-counting location that renders the modem incapable of transmitting election results.
- 14h. Scanner failure
A malfunction or interruption of a paper ballot reading device that either renders the device incapable of counting votes or renders the tabulated results inaccurate.
- 14i. Ballot encoder/activator failure
A malfunction or interruption of that piece of a DRE that encodes a smart card or other similar device with the voter's ballot or with critical demographic data that allows the machine to access the proper ballot for the voter.
- 14j. Audio ballot failure
A malfunction or interruption of the hardware, software, or peripherals that renders a DRE incapable of playing an audio version of the ballot.
- 14k. Other voting machine malfunctions

Applicability and Coverage

Question 14 on voting equipment malfunctions had by far the least coverage of any of the survey questions. Twenty-one states did not respond to the question or said that information on malfunctions was not available. Two states said that no voting equipment malfunctions were reported, and 10 states reported only one to six malfunctions statewide. Of 20 states that provided detailed county-by-county responses, only eight specified whether the affected machines were returned to service and only four identified the precincts in which the malfunctions occurred.

In all, we have information from only 485 of the 6,567 jurisdictions in the EAC database, or only seven percent of the country. Table 14a shows the type of voting equipment used by these jurisdictions. Of these 485 jurisdictions, 210 used optical scan systems, 191 used electronic voting systems, 36 used lever machines, 11 used punch cards, and four used hand-counted paper ballots. Thirteen responses were from jurisdictions using more than one type of voting equipment.

Figure 11.1



Survey Results

Due to the small number of responses to the question on voting equipment malfunctions, we did not create the standard data table that forms the basis for other chapters in this report. Instead, we created a table that shows the number of malfunctions reported for each voting equipment type. That information is in Table 11a, along with the number of jurisdictions for each equipment type.

Table 11a. Reported Voting Equipment Malfunctions by Equipment Type

(No. of Jurisdictions)	Total Number Malfunctions	Electronic	Lever	Optical Scan	Paper ballots	Punch Cards	Mixed
(465)	(191)	(36)	(210)	(4)	(11)	(13)	
14a. Power Failures	219	169	1	39	0	2	8
14b. Broken Counter	8	1	5	1	1	0	0
14c. Computer Failure	381	208	1	162	1	3	6
14d. Printer Failure	489	439	5	42	1	0	2
14e. Screen Failure	346	320	0	4	0	0	22
14f. Fatal Damage	32	18	3	7	0	0	4
14g. Modem Failure	69	5	0	64	0	0	0
14h. Scanner Failure	566	19	0	541	1	0	5
14i. Ballot Encoder/ Activator Failure	106	98	1	5	0	0	2
14j. Audio Ballot Failure	6	6	0	0	0	0	0
14k. Other Failure	271	71	139	22	0	32	7

The responses from states to the Election Day Survey clearly show that certain types of equipment failures tend to be tied to certain types of equipment. Printer problems tend to be tied to electronic voting equipment, while scanner failures are most apt to occur with optical scan systems. Screen and power failures were mainly problems of electronic systems. Computer failures occurred in both electronic and optical scan systems.

Although the EAC did not ask the reason for each voting equipment malfunction, except for the “Other Failure” category, some states provided that information for all categories. Tables 11b and 11c list the reasons provided by states for malfunctions affecting electronic and optical scan voting equipment.

Table 11b. Reported Reasons for Electronic Voting Equipment Malfunctions

Type of Malfunction	Reason for Malfunction
14a. Power Failures	Battery, Power Cord
14b. Broken Counter	—
14c. Computer Failure	Export problem, Memory card
14d. Printer Failure	Write-in door jam, Paper jam
14e. Screen Failure	Blank screen, Frozen screen, Calibration problem
14f. Fatal Damage	Motherboard
14g. Modem Failure	—
14h. Scanner Failure	Feed problem
14i. Ballot Encoder/Activator Failure	Jam, Incorrect ballot setup
14j. Audio Ballot Failure	—

Type of Malfunction	Reason for Malfunction
14k. Other Failure	Insufficient recycle time between voters, Curtain mechanism broken

Table 11c. Reported Reasons for Optical Scan Voting Equipment Malfunctions

Type of Malfunction	Reason for Malfunction
14a. Power Failures	Battery, Machine unplugged
14b. Broken Counter	Unknown
14c. Computer Failure	Memory pack, Memory card
14d. Printer Failure	Ribbon malfunction, Paper jam
14e. Screen Failure	—
14f. Fatal Damage	—
14g. Modem Failure	Telephone line
14h. Scanner Failure	Ballot jam, Reader head, Channel coding problem, Tabulator problem
14i. Ballot Encoder/Activator Failure	—
14j. Audio Ballot Failure	—
14k. Other Failure	Broken Counter, Pointer stuck, Underprinted ballots

For lever machines, reasons for equipment malfunctions included stuck levers, incorrect ballot strips, broken curtain mechanisms, and printer failures (e.g., printer unplugged). For punch cards, reasons for equipment malfunctions included voter units not recognized (computer failure), data pack failures, broken counters, and ballot cards not punched through.

REFERENCES

Saltman, Roy. 1978. *Effective Use of Computing Technology in Vote-Tallying*. Final project report prepared by Information Technology Division of Institute for Computer Sciences and Technology, National Bureau of Standards, for Clearinghouse on Election Administration, Office of Federal Elections, General Accounting Office. Washington, DC: GPO.