## Chapter 9 Voting Equipment Usage

Table 9 presents data from the Election Day Survey on the type of voting equipment used by election jurisdictions during the November 2, 2004, election. The survey asked for a listing of the type and manufacturer of voting systems in use; the number of units for each system; software versions, if applicable; and whether the voting systems previously had been used in a federal election.

## Applicability and Coverage

State responses to the five parts of question 13 on voting equipment usage were mixed. Some states responded to each part, while others provided a single response that had to be split apart and reclassified. Some states provided important information that was not requested-e.g, name of voting equipment hardware or ballot tabulation method (e.g., precinct or central-count). Nine states did not respond to question 13 at all.

All information that states provided on voting equipment, including information not requested by the survey, was standardized following a format established by National Association of State Election Directors (NASED) for qualifying voting systems. ${ }^{1}$ Therefore, the tabulated version of question 13 has nine parts:

1) Company
2) Voting equipment type
3) Voting system
4) Ballot tabulation method
5) Software
6) Previous use at a federal election
7) Voting equipment hardware
8) Number of units
9) Voting equipment hardware version

Only data on voting equipment type is generally complete. For states that did not respond to question 13, information on equipment type was obtained from media reports or voting equipment summaries published by the National Association of Secretaries of State on the Web. In other instances, voting equipment type was determined from other information on the survey for voting equipment hardware. About 30 states identified voting equipment manufacturers, and about 20 states provided information on the number of units and previous use at a federal election.

The survey results on the different types of voting equipment used by local election jurisdictions are presented in chapter 9 . Also included in this chapter is information on voting equipment hardware and manufacturers. The results on the number of units and ballot tabulation methods are in chapter 10 . The results on voting equipment malfunctions are in chapter 11.

There are five generic types of voting equipment: (1) punch card, (2) optical scan, (3) electronic, (4) lever machine, and (5) paper ballot. A sixth category, "mixed," is for jurisdictions using more than

[^0]one type of voting equipment. The punch card category includes DataVote and Votomatic systems. ${ }^{2}$ Electronic refers to direct recording electronic (DRE) devices utilizing touch screens, push buttons, or select wheels for voters to indicate their preferences.

The following is a comprehensive listing of voting equipment hardware that local election jurisdictions reported were used at the November 2, 2004, general election. The listing is by company. In some instances, survey respondents reported the names of voting equipment distributors instead of manufacturers. Some of the companies—Automatic Voting Machine Corp. (AVM), for exampleare no longer in business. Because of licensing or other agreements, some voting equipment hardware-Optech Eagle, for example—was manufactured or sold by two or more companies.

Table 9a. Voting Equipment for the November 2004 General Election

| Company | Hardware | Type |
| :---: | :---: | :---: |
| Airmac Technology Systems, Inc. | MR 210 | Optical scan |
| Automatic Voting Machine Corp. (AVM) Predecessor of Sequoia Voting Systems | AVM <br> AVM-NP <br> AVM-NS <br> AVM-POM 40 <br> AVM-POM 50 <br> AVM-Printomatic <br> AVM-RS | Lever <br> Lever <br> Lever <br> Lever <br> Lever <br> Lever <br> Lever |
| Advanced Voting Solutions (AVS) <br> Formerly, Shoup Voting Solutions, Inc. Predecessor companies include R.F. Shoup Corp. | AVM-NS <br> AVM-RS <br> WINscan <br> WINvote | Lever <br> Lever <br> Optical scan <br> Electronic |
| Computing Devices Canada | Elex Voting System | Electronic |
| Danaher Controls <br> Division of Danaher Corp. | ELECTronic 1242 <br> Shouptronic 1242 | Electronic <br> Electronic |
| DFM Associates | Mark-A-Vote | Optical scan |
| Diebold Election Systems <br> Predecessor companies include Global Election Systems Inc. and Data Information Management Systems (DIMS) | AccuTouch <br> AccuTouch (Global) <br> AccuVote ES-2000 <br> AccuVote ES-2000 (Global) <br> AccuVote-OS <br> AccuVote-OS (Global) <br> AccuVote-TS <br> AccuVote-TS R6 <br> Global NCS 5 | Electronic <br> Electronic <br> Optical scan <br> Optical scan <br> Optical scan <br> Optical scan <br> Electronic <br> Electronic <br> Optical scan |

Table 9a. Voting Equipment 2004 (cont.)

[^1]Election Data Services, Inc.

| Company | Hardware | Type |
| :---: | :---: | :---: |
| Data Information Management Systems Predecessor of Diebold Inc. | DataVote | Punch Card |
| ES\&S (Election Systems \& Software) | BRC P-III | Punch card |
| Predecessor companies include American | Cardamation (CES) | Punch card |
| Information Systems, Inc. (AIS), Business | CES Votomatic | Punch card |
| Records Corp. (BRC), and Computer Election | Dell Ultra Scan | Punch card |
| Systems (CES) | DOC 600 | Punch card |
|  | ETP-IV (BRC) | (unknown) |
|  | iVotronic | Electronic |
|  | Model 100 | Optical scan |
|  | Model 115 | Optical scan |
|  | Model 115 (AIS) | Optical scan |
|  | Model 150 | Optical scan |
|  | Model 150 (AIS) | Optical scan |
|  | Model 315 | Optical scan |
|  | Model 315 (AIS) | Optical scan |
|  | Model 550 | Optical scan |
|  | Model 550 (AIS) | Optical scan |
|  | Model 650 | Optical scan |
|  | Optech | Optical scan |
|  | Optech 1 (CES) | Optical scan |
|  | Optech Eagle | Optical scan |
|  | Optech II | Optical scan |
|  | Optech II (BRC) | Optical scan |
|  | Optech III | Optical scan |
|  | Optech III (BRC) | Optical scan |
|  | Optech III-P | Optical Scan |
|  | Optech III-P (BRC) | Optical scan |
|  | Optech III-P Eagle | Optical scan |
|  | Optech IV-C | Optical scan |
|  | Optech IV-C (BRC) | Optical scan |
|  | Optech IV-C 200 | Optical scan |
|  | Optech IV-C 200 (BRC) | Optical scan |
|  | Optech IV-C 400 | Optical scan |
|  | Optech IV-C 400 (BRC) | Optical scan |
|  | PBC 2100 | Punch card |
|  | PBC 5 | Punch card |
|  | PBC 6 | Punch card |
|  | PBC III-D | Punch card |
|  | PBC III-D (BRC) | Punch card |
|  | PC-BT | Punch card |
|  | Pollstar Votronic | Punch card |
|  | V-200 | Electronic |
|  | Votomatic | Punch card |
|  | Votomatic (CES) | Punch card |

Table 9a. Voting Equipment 2004 (cont.)

| Company | Hardware | Type |
| :--- | :--- | :--- |
| ES\&S (cont.) | Votomatic III | Punch card |

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|  | Votronic <br> Votronic I <br> Votronic II | Electronic <br> Electronic <br> Electronic |
| :---: | :---: | :---: |
| Fidlar <br> Predecessor companies include Fidlar DoubleDay Inc., Fidlar \& Chambers Co. and Governmental Business Systems Inc. (GBS) | AccuVote ES-2000 <br> AccuVote-OS <br> DIS <br> EV 2000 | Optical scan <br> Optical scan <br> Punch card <br> Electronic |
| Governmental Data Systems (GDS) | ATS MR 200 | Optical scan |
| Hart InterCivic Inc. | Ballot Now <br> eSlate | Optical scan Electronic |
| International Election Systems (IES) | Shoup Model 2.5 | Lever |
|  | Shoup Model 3.2 | Lever |
| MicroVote General Corp. | Infinity <br> MEMS <br> MV-464 | Electronic <br> (unknown) <br> Electronic |
| Peripheral Dynamics Inc. (PDI) | PDI 6111 HT | Punch card |
| R.F. Shoup Corp. <br> Predecessor of Shoup Voting Solutions/AVS | Shoup <br> Shouptronic 1242 | Lever <br> Electronic |
| Sequoia Voting Systems <br> Predecessor companies include Sequoia Pacific Voting Systems, Inc. and Automatic Voting Machine Corp. | AVC Advantage <br> AVC Edge <br> AVM <br> DataVote <br> Optech Eagle <br> Optech III-P <br> Optech III-P Eagle <br> Optech Insight <br> Optech IV-C <br> AVM Printomatic-30 | Electronic <br> Electronic <br> Lever <br> Punch Card <br> Optical scan <br> Optical scan <br> Optical scan <br> Optical scan <br> Optical scan <br> Lever |
| Triad Governmental Systems Inc. | ELECtab | Punch Card |
| Unilect Corp. | Patriot | Electronic |
| Votec Corp. | Votomatic III-A <br> Votomatic III-P | Punch card <br> Punch card |
| Voting Technologies International (VTI) | VoT Ware | Electronic |
| Webb Systems | $\begin{aligned} & \text { BCCS } 228 \\ & \text { BCCS } 312 \\ & \hline \end{aligned}$ | Punch card <br> Punch card |
| (company unknown) | Benton BC-1000 <br> Documation <br> Documentation M-1000 <br> Documentation M-200 <br> Documentation M-600L <br> ETNet | Punch card Punch card Punch card Punch card Punch card Punch card |

Only about half of the survey respondents provided the names of the manufacturers of voting systems used at the November 2004 election. The following table identifies the manufacturers and, in some instances, the distributors, of voting systems used by local election jurisdictions in 2004 and is sorted by the number of jurisdictions covered.

Election Data Services, Inc.

Table 9b.
Voting Equipment Manufacturers, November 2004 General Election

| Voting Equipment Manufacturer | Jurisdictions |
| :--- | :---: |
| ES\&S (Election Systems \& Software) | 1,638 |
| Diebold Election Systems | 1,444 |
| Danaher Controls | 236 |
| Sequoia Voting Systems (including AVM) | 201 |
| Fidlar | 180 |
| Microvote General Corp. | 169 |
| Advanced Voting Solutions (incl. R.F.Shoup) | 44 |
| IES (International Election Systems) | 33 |
| Hart InterCivic Inc. | 25 |
| Unilect Corp. | 25 |
| Webb Systems | 9 |
| DFM Associates | 8 |
| Triad Governmental Systems Inc. (Triad GSI) | 7 |
| Votec Corp. | 3 |
| AirMac Technologies Inc. | 1 |
| Computing Devices Canada (CDC) | 1 |
| Governmental Data Systems (GDS) | 1 |
| Peripheral Dynamics Inc. (PDI) | 1 |
| Voting Technologies International (VTI) | 1 |
| (Manufacturer not indicated) | 3,970 |

## Historical Context

Prior to 1980, no one kept track of what kind of voting equipment was used in all jurisdictions in the United States. While state laws may provide some parameters for the type of voting equipment that is allowed in a state, the final decision has traditionally been left to local election administrators. In 1979, the Federal Election Commission's Office of Election Administration (the predecessor to the


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Figure 9.2 Voting Equipment 1980-2004, Percent of Registered Voters

For much of this country's history, voters have used paper ballots. As the country grew and became more urbanized, the task of counting paper ballots took longer. With the Industrial Revolution, a mechanical way was found to produce instantaneous election results-the lever machine. Mechanical lever machines were invented in the 1890s, and their use in elections grew rapidly over the next 70 years. Lever machines combined the casting, recording, and counting of votes in one apparatus. And it is interesting to note in light of the current controversy over electronic voting that for all those 70 years, voters were not receiving, nor were election officials counting, physical ballots.

Precincts then tended to be smaller in size because the high cost of lever machines prevented election officials from placing large numbers of these devices in each precinct. By the middle of the 20th century, the main source of polling place judges-housewives-had begun moving into the workforce. As a result of this loss in manpower (or womanpower), election officials looked to cutting the overall number of precincts and increasing the size of the remaining polling places. Punch card voting systems, first used in 1964, were a popular solution to this problem. Suburban and urban communities around the nation soon found that the cost of 10 punch card devices was similar to just two lever machines, allowing election officials to create larger precincts. While bigger counties began to adopt punch cards, smaller counties needed a solution that would allow them to continue to use paper ballots, but tally election results more quickly. This led to the development of optical scan devices for voting in the 1970s and 1980s.

With the advent of computers and the need to replace aging mechanical lever machines, the 1970s also saw the introduction of electronic voting systems. Early electronic voting devices looked much like lever machines, with push buttons replacing levers on a large panel. Newer DREs, resembling ATMs (automatic teller machines), had touch-screen panels and keypads for entering write-in votes. Voter preferences went directly into electronic storage, usually without a paper record of the voter's intent.

## Survey Results

Table 9 presents data on voting equipment usage from question 13 on the Election Day Survey. In the table, both the number of registered voters and the count of jurisdictions, using each of six different types of voting equipment (including multiple systems), is calculated. Because the EAC dataset is incomplete, a seventh category of "Unknown" is also shown. Because the information is so wide, the table spans multiple pages. The column headings in Table 9 are as follows:

# Table 9 Column Headings. Voting Equipment Usage 

| Col. | Heading | Description |
| :---: | :---: | :---: |
| 1 | Code | State census code |
| 2 | Name | Respondent to Election Day Survey |
| 3 | Jurisdiction | Number of local election jurisdictions from survey question 22 |
| 4 | 2004 Total Registration | Number of active and inactive registered voters, number of persons who voted on Election Day in six states, and VAP data for North Dakota and jurisdictions in Wisconsin that do not have voter registration, from col. 4 of table 2 |
| 5 | Number of Juris. Using Punch card Equipment | Number of jurisdictions that responded to survey question 13 and reported the use of punch cards |
| 6 | \% of Juris. Using Punch card Equipment | Number of jurisdictions using punch cards (col. 5) divided by the total number of election jurisdictions (col. 3) |
| 7 | Regis. in Juris. Using Punch card Equipment | Number of registered voters in jurisdictions that reported the use of punch cards |
| 8 | Cases | Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of punch cards |
| 9 | \% of Regis. Using Punch card Equipment | Number of registered voters in jurisdictions that reported the use of punch cards (col. 7) divided by the total number of registered voters (col. 3) |
| 10 | Number of Juris. Using Optical Scan Voting Equipment | Number of jurisdictions that responded to survey question 13 and reported the use of optical scan equipment |
| 11 | \% of Juris. Using Optical Scan Voting Equipment | Number of jurisdictions using optical scan equipment (col. 10) divided by the total number of election jurisdictions (col. 3) |
| 12 | Regis. in Juris. Using Optical Scan Voting Equipment | Number of registered voters in jurisdictions that reported the use of optical scan equipment |
| 13 | Cases | Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of optical scan equipment |
| 14 | \% of Regis. Using Optical Scan Voting Equipment | Number of registered voters in jurisdictions that reported the use of optical scan equipment (col. 12) divided by the total number of registered voters (col. 3) |

## Table 9 Column Headings (cont.)

| Col. | Heading | Description |
| :---: | :---: | :---: |
| 15 | Number of Juris. Using Electronic Voting Equipment | Number of jurisdictions that responded to survey question 13 and reported the use of electronic equipment |
| 16 | \% of Juris. Using Electronic Voting Equipment | Number of jurisdictions using electronic equipment (col. 15) divided by the total number of election jurisdictions (col. 3) |
| 17 | Regis. in Juris. Using Electronic Voting Equipment | Number of registered voters in jurisdictions that reported the use of electronic equipment |
| 18 | Cases | Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of electronic equipment |
| 19 | \% of Regis. Using Electronic Voting Equipment | Number of registered voters in jurisdictions that reported the use of electronic equipment (col. 17) divided by the total number of registered voters (col. 3) |
| 20 | Number of Juris. Using Lever Machine Voting Equipment | Number of jurisdictions that responded to survey question 13 and reported the use of lever machines |
| 21 | \% of Juris. Using Lever Machine Voting Equipment | Number of jurisdictions using lever machines (col. 20) divided by the total number of election jurisdictions (col. <br> 3) |
| 22 | Regis. in Juris. Using Lever Machine Voting Equipment | Number of registered voters in jurisdictions that reported the use of lever machines |
| 23 | Cases | Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of lever machines |
| 24 | \% of Regis. Using Lever Machine Voting Equipment | Number of registered voters in jurisdictions that reported the use of lever machines (col. 24) divided by the total number of registered voters (col. 3) |
| 25 | Number of Juris. Using Paper Ballots Voting Equipment | Number of jurisdictions that responded to survey question 13 and reported the use of paper ballots |
| 26 | () Extra line of space in this cell at top \% of Juris. Using Paper Ballots Voting Equipment | Number of jurisdictions using paper ballots (col. 25) divided by the total number of election jurisdictions (col. 3) |
| 27 | Regis. in Juris. Using Paper Ballots Voting Equipment | Number of registered voters in jurisdictions that reported the use of paper ballots |

## Table 9 Column Headings (cont.)

Col. Heading Description

Cases Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of paper ballots
\% of Regis. Using
Paper Ballots Voting
Equipment
Number of Juris. Using
Mixed Voting Equipment

Number of registered voters in jurisdictions that reported the use of paper ballots (col. 27) divided by the total number of registered voters (col. 3)

Number of jurisdictions that responded to survey question 13 and reported the use of two or more types of voting equipment
\% of Juris. Using
Mixed Voting Equipment

Regis. in Juris. Using Mixed Voting Equipment

Number of jurisdictions using two or more types of voting equipment (col. 30) divided by the total number of election jurisdictions (col. 3)

Number of registered voters in jurisdictions that reported the use of two or more types of voting equipment

Cases
\% of Regis. Using Mixed Voting Equipment

Number of Juris., Unknown (Not Reported)
\% of Juris., Unknown (Not Reported)

Regis. in Juris., Unknown (Not Reported)

Number of jurisdictions that responded to survey question 1, that provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to question 13 and reported the use of two or more types of voting equipment Number of registered voters in jurisdictions that reported the use of two or more types of voting equipment (col. 32) divided by the total number of registered voters (col. 3)

Number of jurisdictions that responded to parts of survey question 13, but not the type of voting equipment used Number of jurisdictions that responded to parts of survey question 13, but not the type of voting equipment used (col. 35) divided by the total number of election jurisdictions (col. 3)

Number of registered voters in jurisdictions that responded to parts of survey question 13, but not the type of voting equipment used
Cases Number of jurisdictions that responded to survey question 1, provided Election Day registration data, or for which VAP data was substituted for voter registration data; and jurisdictions that responded to parts of survey question 13, but not the type of voting equipment used
\% of Regis., Unknown Number of registered voters in jurisdictions that parts of (Not Reported)
survey question 13 , but not the type of voting equipment used (col. 37) divided by the total number of registered voters (col. 3)

## Analysis of Survey Results

The following is our analysis of the data in Table 3 for each of the 18 cross-tabulation factors described earlier in this report. A description of each factor follows a general summary and a statelevel summary of the survey data.

1) Regions 10) Changed Voting Equipment since 2000
2) Urban to Rural
3) Size of Jurisdiction
4) Statewide Voter Registration Database
5) Race and Ethnicity
6) Election Day Registration
7) Median Income
8) Provisional Ballot Acceptance
9) High School Education
10) Section 203 Language Minority Requirements
11) No Excuse Absentee Balloting
12) Early Voting
13) Battleground States
14) Presidential Margin of Victory
15) Section 5 Preclearance of Voting Procedures
16) Red versus Blue Jurisdictions

This analysis is based only on data that was reported to the EAC on the Election Day Survey. Many state responses to a survey question or part of a question did not cover all local election jurisdictions. In Table 9 as well as other tables in this report, a jurisdiction was excluded from a statistical calculation if its response was missing for one or more of the data items (i.e., columns) used in the calculation. A column labeled "Cases" next to each statistical calculation shows the number of jurisdictions covered by that calculation.

## Summary

The EAC dataset shows the following nationwide characteristics of voting equipment usage in the 2004 general election. (See Table 9c below.) As noted previously, the information is not complete for nearly 14 percent of the jurisdictions in the nation, which covers more than four percent of the registered voters.

Table 9c. Voting Equipment Usage, 2004 General Election

| Type of Voting <br> Equipment | Number of <br> Jurisdictions | Percent of <br> Jurisdictions | Registration in <br> Jurisdictions | Cases | Percent of <br> Registration |
| :--- | :---: | ---: | ---: | ---: | ---: |
| Punch Card | 260 | 4.0 | $15,691,323$ | 259 | 9.0 |
| Optical Scan | 2,543 | 38.7 | $69,544,126$ | 2,525 | 39.8 |
| Electronic | 611 | 9.3 | $43,571,704$ | 611 | 25.0 |
| Lever | 394 | 6.0 | $21,662,657$ | 390 | 12.4 |
| Paper Ballots | 1,733 | 26.4 | $3,068,977$ | 1,732 | 1.8 |
| Mixed Systems | 124 | 1.9 | $13,367,303$ | 123 | 7.7 |
| Unknown | 902 | 13.7 | $7,726,205$ | 759 | 4.4 |
| TOTAL | 6,567 | 100.0 | $174,632,295$ | 6,399 | 100.0 |

The data in Table 9a is illustrated in the following charts:

Figure 9.3. Voting Equipment Usage, 2004: Jurisdictions


Figure 9.4. Voting Equipment Usage, 2004: Registration


Besides being incomplete, one of the most significant differences between the data published by Election Data Services and the EAC is the geographic structure used. While Election Data Services keeps its database at the jurisdiction level, for the purposes of mapping and publishing Election Data Services has traditionally shown data for counties. This has meant that for the New England states,
along with Michigan, Minnesota, and Wisconsin, there is a greater existence of "mixed" systems in the Election Data Services results, along with a corresponding decrease in the individual voting system types. This is because the jurisdiction data is summed to the county level. In these nine states voting-equipment purchase decisions have been traditionally made by individual townships. Election Data Services has independently verified that for jurisdictions in the nation over one-quarter still use paper ballots.

## States

While local jurisdictions have traditionally made the decision about what kind of voting equipment to purchase, more states have begun imposing a mandate that uniform equipment types be used. This was not the result of the 2000 Bush v. Gore_court decision by the U.S. Supreme Court, but began years earlier in several states as a cost-savings strategic decision. The 2004 elections found 12 states and territories that had adopted uniform voting-equipment usage. The states and the voting equipment type used are: Optical scan—Alaska, Arizona, Oklahoma, Oregon, and Rhode Island; electronic—Delaware, Georgia, Maryland, and Nevada; lever machines- New York; and mixed systems-District of Columbia and Hawaii.

## Regions

The Midwest has the largest number of jurisdictions using punch cards, but punch cards account for just 18 percent of the registered voters in the region. A plurality of jurisdictions in the Midwest use optical scan voting systems. However, the greater percentage of registered voters using optical scan systems is in the West, where over 62 percent of the registered voters mark their ballots with a pencil or pen. Because of the state of Georgia's recent adoption of electronic voting, the South has the largest usage of electronic voting systems in the country. A plurality of just over 41 percent of the registered voters in the South use electronic voting equipment. Lever machines still dominate the Northeast where over 55.4 percent of the registered voters in the region use lever devices, which were manufactured in the Northeast. Paper ballots are mainly split between the Midwest and the Northeast, but in either region they are used by less than 3.5 percent of the registered voters.

## Urban to Rural

Over 58 percent of the urban jurisdictions in this nation use optical scan voting systems, as do a plurality of the suburban and small town communities. A plurality of the rural jurisdictions in the nation use paper ballots, closely followed by optical scan systems. Due to the distribution of registered voters in rural communities, however, over 60 percent of rural registered voters have their ballots counted by optical scan systems.

## Size of Jurisdiction

The EAC data shows that the larger the size of a jurisdiction the more likely they are to be using electronic voting equipment. This has traditionally not been the case, as punch cards were almost exclusively used by large jurisdictions in this nation. Paper ballots are mainly concentrated in the smaller jurisdictions, with over 61 percent of the 1,761 jurisdictions that have under 1,000 voting age population (VAP) using pencil and pens, and presumably counting the ballots by hand. As jurisdictions grow in size they move to optical scan systems to ease the counting process. A clear majority of the jurisdictions that have between 3,500 and 50,000 VAP use optical scan devices.

## Race and Ethnicity

A plurality of the predominantly non-Hispanic White jurisdictions in this nation use optical scan technology, closely followed by electronic systems. On the other hand, nearly two-thirds of African American voters are casting their votes on electronic systems. Over two-thirds of voters in predominantly Native American and Hispanic communities use optical scan devices.

## Median Income

There appears to be a small relationship between income levels and the use of optical scan systems. The lower the income levels in a jurisdiction, the higher likelihood they will be using optical scan systems. Electronic machines are used to a greater degree in both the poorest and the wealthiest jurisdictions in the nation.

## High School Education

There does not appear to be a relationship between education levels and type of voting equipment used.

## Section 203 Language Minority Requirements

A majority of the jurisdictions covered by the Section 203 language minority requirements of the Voting Rights Act use optical scan voting systems. Due to the smaller size of these jurisdictions, however, they represent just a plurality of the registered voters.

## Section 5 Preclearance of Voting Procedures

A plurality of the jurisdictions and registered voters covered by Section 5 of the Voting Rights Act used optical scan devices in 2004, closely followed by electronic voting equipment.

## Type of Voting Equipment

Not applicable.

## Changed Voting Equipment since 2000

A plurality of the jurisdictions that changed voting equipment since 2000 went to optical scan systems.

## Statewide Voter Registration Database

No real patterns are discernible in this subcategory.

## Election Day Registration

A majority of registered voters in jurisdictions that allow Election Day registration are much more likely to use optical scan voting equipment.

Provisional Ballot Acceptance
No real patterns are discernible in this subcategory.
No Excuse Absentee Balloting
No real patterns are discernible in this subcategory.

## Early Voting

While a slight majority of registered voters who can utilize early voting procedures are using optical scan devices, there is a larger-than-average number that are also on electronic voting systems. Electronic voting systems are thought to be easier to manage in an early voting environment because they can maintain many different ballot styles in a jurisdiction. This would eliminate the need to keep lots of different paper ballots at each early-voting site.

## Battleground States

No real patterns are discernible in this subcategory, although electronic voting systems were more likely to be found in nonbattleground states.

## Presidential Margin of Victory

No real patterns are discernible in this subcategory.

## Red versus Blue Jurisdictions

No real patterns are discernible in this subcategory, although lever machines were more likely to be used in jurisdictions carried by Kerry than by Bush. On the other hand, jurisdictions using punch cards were much more likely to support Bush than Kerry.

| EAC Election Day Survey |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Voting Equipment Usage 2004 General Election |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Updated: 09/19/2005 13:06:28 |  |  | Punchcard Voting Equipment (Inc.Datavote) |  |  |  |  | Optical Scan Voting Equipment |  |  |  |  | Electronic Voting Equipment |  |  |  |  |
| Code | Name | $\begin{array}{r} \text { Election } \\ \text { Administration } \\ \text { Jurisdictions } \end{array}$ |  | $\begin{gathered} \hline \hline \text { Number } \\ \text { of Juris. } \\ \text { Using } \end{gathered}$ | $\begin{aligned} & \hline \hline \text { \% of } \\ & \text { Juris. } \\ & \text { Using } \end{aligned}$ | $\begin{array}{r} \hline \hline \text { Regis in } \\ \text { Juris. } \\ \text { Using } \\ \hline \end{array}$ | Cases | $\begin{gathered} \hline \% \text { of } \\ \text { Regis } \\ \text { Using } \end{gathered}$ | Number <br> of Juris. <br> Using | $\begin{aligned} & \hline \text { \% of } \\ & \text { Juris. } \\ & \text { Using } \end{aligned}$ | $\begin{array}{r} \text { Regis in } \\ \text { Juris. } \\ \text { Using } \\ \hline \hline \end{array}$ | Cases | $\begin{aligned} & \hline \% \text { of } \\ & \text { Regis } \\ & \text { Using } \end{aligned}$ | $\begin{gathered} \hline \hline \text { Number } \\ \text { of Juris. } \\ \text { Using } \end{gathered}$ | $\begin{aligned} & \hline \hline \text { \% of } \\ & \text { Juris. } \\ & \text { Using } \end{aligned}$ | $\begin{array}{r} \hline \text { Regis in } \\ \text { Juris. } \\ \text { Using } \\ \hline \end{array}$ | Cases | $\begin{aligned} & \hline \% \text { of } \\ & \text { Regis } \\ & \text { Using } \end{aligned}$ |
| 01 | Alabama | 67 | 2,597,629 |  |  |  |  |  | 64 | 95.5 | 2,221,414 | 64 | 85.5 | 3 | 4.5 | 376,215 | 3 | 14.5 |
| 02 | Alaska | 1 | 472,160 |  |  |  |  |  | 1 | 100.0 | 472,160 |  | 100.0 |  |  |  |  |  |
| 04 | Arizona | 15 | 2,642,120 |  |  |  |  |  | 15 | 100.0 | 2,642,120 | 15 | 100.0 |  |  |  |  |  |
| 05 | Arkansas | 75 | 1,699,934 | 7 | 9.3 | 280,764 | 7 | 16.5 | 47 | 62.7 | 829,822 | 47 | 48.8 | 5 | 6.7 | 89,867 | 5 | 5.3 |
| 06 | California | 58 | 16,646,555 | 12 | 20.7 | 774,216 | 12 | 4.7 | 37 | 63.8 | 10,980,645 | 37 | 66.0 | 8 | 13.8 | 4,118,569 | 8 | 24.7 |
| 08 | Colorado | 64 | 3,101,956 | 1 | 1.6 | 21,900 | 1 | 0.7 | 49 | 76.6 | 1,504,027 | 49 | 48.5 | 1 | 1.6 | 215,141 | 1 | 6.9 |
| 09 | Connecticut | 169 | 1,831,567 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | Delaware | 3 | 553,917 |  |  |  |  |  |  |  |  |  |  | 3 | 100.0 | 553,917 | 3 | 100.0 |
| 11 | District of Columbia | 1 | 383,919 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | Florida | 67 | 10,300,942 |  |  |  |  |  | 50 | 74.6 | 4,630,220 | 50 | 44.9 | 15 | 22.4 | 5,576,264 | 15 | 54.1 |
| 13 | Georgia | 159 | 4,248,802 |  |  |  |  |  |  |  |  |  |  | 159 | 100.0 | 4,248,802 | 159 | 100.0 |
| 15 | Hawaii | 5 | 647,238 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | Idaho | 44 | 915,637 | 14 | 31.8 | 551,753 | 14 | 60.3 | 14 | 31.8 | 293,988 | 14 | 32.1 |  |  |  |  |  |
| 17 | Illinois | 110 | 7,195,882 | 41 | 37.3 | 3,914,460 | 40 | 54.4 | 69 | 62.7 | 3,281,422 | 64 | 45.6 |  |  |  |  |  |
| 18 | Indiana | 92 | 4,296,602 | 17 | 18.5 | 605,253 | 17 | 14.1 | 31 | 33.7 | 1,580,818 | 31 | 36.8 | 43 | 46.7 | 2,090,436 | 43 | 48.7 |
| 19 | Iowa | 99 | 2,226,721 |  |  |  |  |  | 84 | 84.8 | 1,978,431 | 83 | 88.8 | 14 | 14.1 | 225,295 | 14 | 10.1 |
| 20 | Kansas | 105 | 1,695,457 |  |  |  |  |  | 81 | 77.1 | 1,007,154 | 81 | 59.4 | 3 | 2.9 | 612,845 | 3 | 36.1 |
| 21 | Kentucky | 120 | 2,794,286 |  |  |  |  |  | 1 | 0.8 | 475,805 | 1 | 17.0 | 114 | 95.0 | 2,268,053 | 114 | 81.2 |
| 22 | Louisiana | 64 | 2,932,142 |  |  |  |  |  |  |  |  |  |  | 14 | 21.9 | 1,602,769 | 14 | 54.7 |
| 23 | Maine | 517 | 1,026,219 |  |  |  |  |  | 114 | 22.1 | 668,361 | 114 | 65.1 |  |  |  |  |  |
| 24 | Maryland | 24 | 3,105,370 |  |  |  |  |  |  |  |  |  |  | 24 | 100.0 | 3,105,370 | 24 | 100.0 |
| 25 | Massachusetts | 351 | 4,098,634 |  |  |  |  |  | 274 | 78.1 | 3,871,863 | 274 | 94.5 |  |  |  |  |  |
| 26 | Michigan | 83 | 7,164,047 | 11 | 13.3 | 248,605 | 11 | 3.5 | 39 | 47.0 | 2,273,618 | 39 | 31.7 | 1 | 1.2 | 25,708 | 1 | 0.4 |
| 27 | Minnesota | 87 | 2,977,496 |  |  |  |  |  | 61 | 70.1 | 2,401,604 | 61 | 80.7 |  |  |  |  |  |
| 28 | Mississippi | 82 | 1,469,608 | 10 | 12.2 | 155,492 | 10 | 10.6 | 61 | 74.4 | 1,004,212 | 49 | 68.3 | 3 | 3.7 | 227,354 | 3 | 15.5 |
| 29 | Missouri | 116 | 4,194,416 | 37 | 31.9 | 1,602,713 | 37 | 38.2 | 70 | 60.3 | 1,779,558 | 70 | 42.4 |  |  |  |  |  |
| 30 | Montana | 56 | 638,474 |  |  |  |  |  | 36 | 64.3 | 598,780 | 36 | 93.8 |  |  |  |  |  |
| 31 | Nebraska | 93 | 1,160,193 |  |  |  |  |  | 48 | 51.6 | 1,047,745 | 48 | 90.3 |  |  |  |  |  |
| 32 | Nevada | 17 | 1,073,869 |  |  |  |  |  |  |  |  |  |  | 17 | 100.0 | 1,073,869 | 17 | 100.0 |
| 33 | New Hampshire | 242 | 950,292 |  |  |  |  |  | 92 | 38.0 | 669,100 | 92 | 70.4 |  |  |  |  |  |
| 34 | New Jersey | 21 | 5,011,693 |  |  |  |  |  | 1 | 4.8 | 63,528 | 1 | 1.3 | 15 | 71.4 | 3,645,764 | 15 | 72.7 |
| 35 | New Mexico | 33 | 505,356 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36 | New York | 58 | 11,837,068 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 | North Carolina | 100 | 5,526,981 | 5 | 5.0 | 430,452 | 5 | 7.8 | 44 | 44.0 | 2,388,318 | 44 | 43.2 | 38 | 38.0 | 2,364,967 | 38 | 42.8 |
| 38 | North Dakota | 53 | 490,179 |  |  |  |  |  | 48 | 90.6 | 478,436 | 48 | 97.6 |  |  |  |  |  |
| 39 | Ohio | 88 | 7,965,110 | 7 | 8.0 | 1,717,316 | 7 | 21.6 |  |  |  |  |  | 1 | 1.1 | 33,094 | 1 | 0.4 |
| 40 | Oklahoma | 77 | 2,143,978 |  |  |  |  |  | 77 | 100.0 | 2,143,978 | 77 | 100.0 |  |  |  |  |  |
| 41 | Oregon | 36 | 2,141,249 |  |  |  |  |  | 36 | 100.0 | 2,141,249 | 36 | 100.0 |  |  |  |  |  |
| 42 | Pennsylvania | 67 | 8,366,455 | 11 | 16.4 | 990,366 | 11 | 11.8 | 24 | 35.8 | 935,731 | 24 | 11.2 | 8 | 11.9 | 2,271,503 | 8 | 27.2 |
| 44 | Rhode Island | 39 | 707,234 |  |  |  |  |  | 39 | 100.0 | 707,234 | 39 | 100.0 |  |  |  |  |  |
| 45 | South Carolina | 46 | 2,318,235 | 1 | 2.2 | 57,612 | 1 | 2.5 | 9 | 19.6 | 258,813 | 9 | 11.2 | 36 | 78.3 | 2,001,810 | 36 | 86.4 |
| 46 | South Dakota | 66 | 502,261 |  |  |  |  |  | 50 | 75.8 | 467,228 | 50 | 93.0 |  |  |  |  |  |
| 47 | Tennessee | 95 | 3,748,235 | 20 | 21.1 | 393,135 | 20 | 10.5 | 11 | 11.6 | 358,016 | 11 | 9.6 | 48 | 50.5 | 2,726,843 | 48 | 72.8 |
| 48 | Texas | 254 | 13,098,329 | 9 | 3.5 | 781,376 | 9 | 6.0 | 142 | 55.9 | 6,051,164 | 142 | 46.2 | 4 | 1.6 | 132,930 | 4 | 1.0 |
| 49 | Utah | 29 | 1,278,912 | 23 | 79.3 | 1,257,684 | 23 | 98.3 | 2 | 6.9 | 16,103 | 2 | 1.3 |  |  |  |  |  |
| 50 | Vermont | 246 | 444,508 |  |  |  |  |  | 68 | 27.6 | 292,211 | 68 | 65.7 |  |  |  |  |  |
| 51 | Virginia | 134 | 4,515,675 | 4 | 3.0 | 752,780 | 4 | 16.7 | 34 | 25.4 | 997,757 | 34 | 22.1 | 26 | 19.4 | 270,161 | 26 | 6.0 |
| 53 | Washington | 39 | 3,508,208 | 13 | 33.3 | 774,622 | 13 | 22.1 | 23 | 59.0 | 2,277,991 | 23 | 64.9 | 2 | 5.1 | 103,357 | 2 | 2.9 |
| 54 | West Virginia | 55 | 1,168,694 | 12 | 21.8 | 421,626 | 12 | 36.1 | 28 | 50.9 | 480,334 | 28 | 41.1 | 2 | 3.6 | 101,807 | 2 | 8.7 |
| 55 | Wisconsin | 1,910 | 4,179,774 |  |  |  |  |  | 554 | 29.0 | 2,750,246 | 554 | 65.8 |  |  |  |  |  |
| 56 | Wyoming | 23 | 273,950 | 5 | 21.7 | 35,422 | 5 | 12.9 | 13 | 56.5 | 177,424 | 13 | 64.8 | 1 | 4.3 | 5,975 | 1 | 2.2 |
| 60 | American Samoa | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 66 | Guam | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 72 | Puerto Rico | 110 | 2,440,131 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 78 | Virgin Islands | 1 | 50,731 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Total | 6,568 | 177,265,030 | 260 | 4.0 | 15,767,547 | 259 | 8.9 | 2,541 | 38.7 | 69,198,628 | 2,523 | 39.0 | 608 | 9.3 | 40,068,685 | 608 | 22.6 |
|  | Maximum | 1,910 | 16,646,555 | 41 | 79.3 | 3,914,460 | 40 | 98.3 | 554 | 100.0 | 10,980,645 | 554 | 100.0 | 159 | 100.0 | 5,576,264 | 159 | 100.0 |
|  | Average | 119 | 3,344,623 | 13 | 19.6 | 788,377 | 12 | 22.5 | 63 | 56.6 | 1,729,965 | 63 | 58.7 | 22 | 34.1 | 1,484,025 | 22 | 39.8 |
|  | Minimum | 1 | 50,731 | 1 | 1.6 | 21,900 | 1 | 0.7 | 1 | 0.8 | 16,103 | 1 | 1.3 | 1 | 1.1 | 5,975 | 1 | 0.4 |








Voting Equipment Usage



[^0]:    ${ }^{1}$ Under the Help America Vote Act of 2002, the U.S. Election Assistance Commission (EAC) is responsible for the certification of voting systems. That function was previously carried out by NASED.

[^1]:    ${ }^{2}$ A Votomatic ballot is prescored and printed only with numbered voting positions. A Votomatic ballot is inserted into a frame to which an attached booklet identifies candidates or answers to ballot questions for each voting position. A stylus is used to punch out prescored chads at voting positions. A Datavote ballot card is printed with a candidate name or answer to a ballot question at each voting position. A Datavote ballot card is inserted into a frame with a movable punching device. Voters align the punching device with a candidate name or answer to a ballot question, and then press the device to punch out a hole in the card at the appropriate voting position. Because candidate names are printed on the actual Datavote card, a usual election involves multiple cards that a voter must cast to complete their ballot.

