

## Summary Tables on Voting Technology and Residual Vote Rates

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**Table 1**  
**Residual Vote Rates by Type of Voting Technology**

Technology	Description	Residual Vote Rate in:		
		2000	2002	2004
Punch Card – Votomatic	Punch card is inserted behind booklet with ballot choices – voter uses stylus to punch out holes in card. Ballots counted by card reader machine.	2.8%	3.5%	1.8%
Punch Card – Datavote	Ballot choices are printed on punch card – voter punches out hole next to chosen candidate. Ballots counted by card reader.	1.2%	2.8%	1.2%
Lever Machine	Candidates listed by levers on a machine – voter pulls down the lever next to chosen candidate. Machine records and counts votes.	1.6%	2.2%	1.0%
Paper Ballot	Candidates are listed on a sheet of paper – voter marks box next to chosen candidate. Ballots counted by hand.	1.9%	2.3%	1.7%
Older DRE (full-face)	Candidates listed on a full-face computerized screen – voter pushes button next to chosen candidate. Machine records and counts votes.	1.6%	2.2%	1.2%
Newer DRE (touch-screen)	Candidates listed on a scrolling computer screen – voter touches screen next to chosen candidate. Machine records and counts votes.		1.2%	1.0%
Optical Scan – Central Count	Voter darkens an oval or arrow next to chosen candidate on paper ballot. Ballots counted by computer scanner at a central location.	1.8%	2.0%	1.7%
Optical Scan – Precinct Count	Voter darkens an oval or arrow next to chosen candidate on paper ballot. Ballots scanned at the precinct, allowing voter to find and fix errors.	0.9%	1.3%	0.7%
InkaVote	Hybrid of Votomatic punch card and optical scan central count systems (used in Los Angeles County, CA)			2.0%
Mixed	More than one voting method used.	1.1%	1.5%	1.0%
<b>Nationwide Residual Vote Rate</b>		<b>1.8%</b>	<b>2.0%</b>	<b>1.1%</b>

Residual vote rates were calculated as the percentage of ballots cast that failed to record a valid vote for president (in 2000 and 2004) or governor (in 2002). 2897 counties were analyzed in 2000, 1847 counties analyzed in 2002, and 3034 counties analyzed in 2004.

**Table 2**  
**Residual Vote Rates by Touch-Screen DRE Brand**  
**2004 Presidential Election**

<b>Brand of Voting Machine</b>	<b>Residual Vote Rate</b>
Unilect Patriot (17 counties)	6.8%
VotWare (1 county)	4.1%
EV 2000 (8 counties)	2.3%
E-Slate (8 counties)	1.8%
Microvote Infinity (20 counties)	1.6%
Winvote (10 counties)	1.1%
AccuVote-TSX (1 county)	0.9%
AVC Edge (24 counties)	0.8%
ES&S iVotronic (55 counties)	0.7%
AccuVote-TS (191 counties)	0.7%
Sequoia DRE with VVPT (17 counties in Nevada)	0.3%
<b>Nationwide Touch-Screen DRE Residual Vote Rate</b>	<b>1.0%</b>

Based on 353 counties using touch-screen DRE voting machines in 2004.

**Table 3**  
**Residual Vote Rates by Full-Face DRE Brand**  
**2004 Presidential Election**

<b>Brand of Voting Machine</b>	<b>Residual Vote Rate</b>
Microvote 464 (97 counties)	1.9%
Shouptronics 1242 (155 counties)	1.2%
AVC Advantage (48 counties)	0.8%
<b>Nationwide Full-Face DRE Residual Vote Rate</b>	<b>1.2%</b>

Based on 300 counties using full-face DRE voting machines in 2004.

**Table 4**  
**Residual Vote Rates by Precinct-Count Optical Scan Brand**  
**2004 Presidential Election**

<b>Brand of Voting Machine</b>	<b>Residual Vote Rate</b>
Optech 3P Eagle (259 counties)	0.9%
ES&S M100 (106 counties)	0.6%
AccuVote-OS (265 counties)	0.6%
<b>Nationwide Precinct-Count OS Residual Vote Rate</b>	<b>0.7%</b>

Based on 630 counties using precinct-count optical scan balloting in 2004.

**Table 5**  
**Racial and Economic Disparity in Residual Votes by Voting Technology**  
**2000 Presidential Election**

<b>Racial composition of county</b>	<b>Residual votes in counties using:</b>				
	<b>Votomatic punch cards</b>	<b>Optical scan - central</b>	<b>Optical scan - precinct</b>	<b>Lever machines</b>	<b>Electronic machines</b>
<b>Less than 10% black</b>	2.2%	1.3%	0.9%	1.1%	1.7%
<b>Between 10% and 30% black</b>	3.1%	2.3%	0.7%	1.7%	1.7%
<b>Over 30% black</b>	5.6%	5.2%	1.9%	2.3%	1.7%
<b>Median Income</b>					
<b>Less than \$25,000</b>	4.5%	4.4%	1.1%	3.4%	2.7%
<b>Between \$25,000 and \$32,499</b>	3.2%	2.1%	1.3%	2.0%	2.2%
<b>Between \$32,500 and \$40,000</b>	3.0%	1.7%	1.0%	1.7%	1.7%
<b>Over \$40,000</b>	2.2%	1.0%	0.8%	1.1%	1.3%

Based on 2897 counties in 2000.

**Table 6**  
**Racial and Economic Disparity in Residual Votes by Voting Technology**  
**2004 Presidential Election**

<b>Racial composition of county</b>	<b>Residual votes in counties using:</b>				
	<b>Votomatic punch cards</b>	<b>Optical scan - central</b>	<b>Optical scan - precinct</b>	<b>Full-Face DRE</b>	<b>Touch- Screen DRE</b>
<b>Less than 10% black</b>	1.8%	1.5%	0.8%	1.3%	1.0%
<b>Between 10% and 30% black</b>	1.7%	1.7%	0.5%	1.2%	0.9%
<b>Over 30% black</b>	2.4%	4.1%	0.9%	1.3%	0.8%
<b>Median Income</b>					
<b>Less than \$25,000</b>	4.0%	3.3%	1.4%	2.8%	1.3%
<b>Between \$25,000 and \$32,499</b>	2.3%	1.7%	0.8%	1.4%	1.1%
<b>Between \$32,500 and \$40,000</b>	2.0%	1.6%	0.7%	1.3%	1.0%
<b>Over \$40,000</b>	1.5%	1.2%	0.7%	0.9%	0.8%

Based on 2402 counties in 2004.

**Table 7**  
**Residual Votes in Optical Scan Ballots by Voting Mark**  
**2004 Presidential Election**

Where Ballots are Counted	Type of Mark	
	Darken an oval	Connect an arrow
Precinct-Count (690 counties)	0.6%	0.9%
Central-Count (789 counties)	1.6%	2.3%
<b>Nationwide Optical Scan Residual Vote Rate</b>	1.0%	

**Table 8**  
**Racial and Economic Disparity in Residual Votes by Voting Technology**  
**2004 Presidential Election**

	Residual votes in counties using:			
	OS – central (arrow)	OS – central (oval)	OS – precinct (arrow)	OS – precinct (oval)
<b>Racial composition of county</b>				
<b>Less than 10% black</b>	2.0%	1.4%	1.1%	0.6%
<b>Between 10% and 30% black</b>	2.4%	1.4%	0.6%	0.5%
<b>Over 30% black</b>	2.8%	4.9%	0.9%	0.8%
<b>Median Income</b>				
<b>Less than \$25,000</b>	6.4%	3.2%	1.6%	1.1%
<b>Between \$25,000 and \$32,499</b>	2.1%	1.7%	0.9%	0.8%
<b>Between \$32,500 and \$40,000</b>	2.1%	1.6%	0.8%	0.7%
<b>Over \$40,000</b>	2.5%	1.0%	1.0%	0.5%

Based on 1448 counties in 2004.