Analysis and Report of Overvotes and Undervotes for the 2008 General Election

Pursuant to Section 101.595, Florida Statutes

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Florida Department of State
KURT S. BROWNING
Secretary of State

Florida Department of State
Division of Elections
Room 316, R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Executive Summary

Florida has changed its voting method to an optical scan or marksense ballot utilizing a marking device for the purpose of designating the voter's ballot selections.[1] This report examines the change in this method and the impact on voters using Florida certified voting systems.

Overall the 2008 General Election data in comparison with the 2004 data shows an increase in the combined statewide 0.75% "no valid vote" rate versus 0.41% for 2004[2]. "No valid vote" is a collective term that refers to the combined uncounted votes due to overvotes, undervotes, and invalid write-in votes. A comparison of the 2002 and 2006 Governor's races with the 2004 and 2008 Presidential races reveal that the "no valid vote" rate is race dependent. Therefore, the 2008 General "no valid vote" rate will be compared with the 2004 General Election, taking into account the difference in voting methods, systems, and voter actions.

This report will show that the combined 67 counties' 2008 overvote rate increased; however, that increase was expected as a result of the change in 15 counties to the paper ballot scanning method from the touchscreen method where that technology prevented an overvote in early voting and election day results. With the change in voting method, the 2008 Presidential overvote rate is 0.28% compared with 0.05% for the 2004 results.

The 2008 Presidential undervote rate of 0.26% improved from 0.36% in 2004. Breaking out information of the 2008 undervote for early voting, election day, and absentee showed rates of 0.17%, 0.26%, and 0.35%, respectively, in comparison with the 2004 undervote rate of 0.30%, 0.36%, and 0.41%, respectively. The 2008 overvote rate for early voting, election day, and absentee showed 0.15%, 0.28%, and 0.43% compared with the 2004 overvote rate of 0.01%, 0.02%, and 0.23%, respectively. The invalid write-ins for 2008 increased to 0.22% from the 2002 rate of 0.08% and 0.06% in 2006.

Undervote Rate 2008 vs 2004

	2008	**2004**
Early Voting	0.17%	0.30%
Election Day	0.26%	0.36%
Absentee	0.35%	0.41%
OVERALL	**0.26%**	**0.36%**

Overvote Rate 2008 vs 2004

	2008	**2004**
Early Voting	0.15%	0.01%
Election Day	0.28%	0.02%
Absentee	0.43%	0.23%
OVERALL	**0.28%**	**0.05%**

[1] Section, 101.56075, Florida Statutes

[2] The 2004 over and undervote report did not address invalid write-in votes in its analysis. As noted later, the invalid write-in vote rate was not significant for 2002 and 2006, but had increased in 2008.

Also, Florida had 35,874 provisional ballots with a 48.1% rejection rate. Of the remaining accepted provisional ballots, the combined "no valid vote" rate was 1.15% with an undervote rate of 0.39% and an overvote rate of 0.76%. The order of increasing "no valid votes" in early voting, election day, absentee, and provisional ballot implies that the voter has an increasing risk of not casting a valid vote without having the voting system alert if there is an overvote or blank ballot using the absentee method or casting a provisional ballot.

The "no valid vote" rate between paper ballots with "oval" selection targets versus the "arrow" selection targets appears no different with selection method or vendor's voting system. The 2008 results show that the ES&S Optech "arrows" method and the Sequoia "arrows" method are also similar when comparing the overvote and undervote rate and when taken together are similar in "no valid vote" with the "oval" selection target method.

Thus, the increase in the combined 2008 "no valid vote" rate was primarily due to overvotes, invalid write-ins, and particular method in which the voter voted.

Historical Background

Florida's combined over and undervote rate since the 2000 General Election has experienced a gradual decline until the 2008 General Election. In 2000, "no valid votes" accounted for 2.9% of the votes cast in the Presidential race utilizing voting systems that included lever machines and punch cards along with a central count voting method for precinct punch cards and mark sense ballots. The election reforms enacted in 2001 included the elimination of lever and punch card voting and the requirement to have precinct tabulation to provide immediate feedback to the voter should a voting error exist. As a result of these changes the combined under and overvote rate for the 2002 Governor's race dropped to 0.78%, or 0.86% when invalid write-in votes were included.[3]

The 2004 election cycle saw another reduction in the combined under and overvote rate, dropping to a historical low of 0.41 % for the Presidential race.[4] It is believed that a statewide, non-partisan voter education campaign, combined with the fact that voters became more accustomed to using new technologies, contributed to the continuation of this downward trend.[5] However, voter interest in a particular election or race does appear to be a primary driver of the "no valid vote" rate. Analysis of the 2006 General Election shows a reversal of this downward trend with the combined under and overvote rate for the Governor's race increasing to 0.98%, similar to the level observed for the 2002 Governor's race. Also, the 2002 and 2006 "no valid vote" rates mirror the combined under and overvote rate with a consistent level of invalid write-in votes below 0.08% until 2008 where it increases to 0.22%. Thus, a comparison of the 2006 results to the 2004 results and the 2006 results to the 2002 results suggests that the combined under and overvote rate is tied directly to the particular race of interest to the public. The findings further suggest that this rate may be cyclical with the type of general election at the top of the ticket (presidential or gubernatorial).

Introduction

Section 101.595, Florida Statutes, delegates to the Department of State the responsibility to analyze and report on the performance of each type of voting system after every general election. The basis for this analysis is the over and undervote report that is provided by each Florida County for either the "President and Vice President" race or "Governor and Lieutenant Governor" race or if neither is present, the first race on the ballot. The Department of State analyzes this information and reports its findings to the Legislature and the Governor by January 31 of the year following the general election.

The purpose of this report is to look at factors relating to "no valid votes" being cast for the race of interest. The three circumstances where this occurs are ballots that contain overvotes, undervotes, or invalid write-in votes (if applicable). Note that an undervote may not be a voting machine error or "lost vote," but rather the prerogative of the voter. Undervotes can occur when

[3] Analysis and Report of Overvotes and Undervotes for the 2002 General Election, Division of Elections, report available at http://doe.dos.state.fl.us/reports/index.shtml
[4] Analysis and Report of Overvotes and Undervotes for the 2004 General Election, Division of Elections, report available at http://doe.dos.state.fl.us/reports/index.shtml
[5] Report on Voter Education Programs During the 2004 Election Cycle, Division of Elections, report available at http://doe.dos.state.fl.us/reports/index.shtml

voters exercise their right to withhold their vote from a particular race: For example, a voter may cast a ballot to maintain voter history without participating in the decision making (voting) process; cast a ballot without a voted race to serve as a protest vote for that race; or cast a ballot without a valid vote for some other reason that is known only to the voter.

An overvote occurs when a voter casts more votes than allowed in a race or ballot measure. This condition is typically voter error and the basis for the requirement that ballots, other than absentee and provisional ballots, be tabulated at the polling location. Tabulation at the polls allows the voter the opportunity to correct a ballot that contains one or more overvoted contests. In the event of an undervote, except for a blank ballot, casting an undervoted paper ballot will not alert the voter of the undervoted contests. Likewise, an absentee ballot or a paper provisional ballot does not provide the voter with the opportunity to correct latent voter error.

An invalid write-in vote may be voter error other than spelling, such as writing in a valid candidate's name from another race. An invalid write-in vote may also be a protest vote, such as "Mickey Mouse," "Bozo the clown," "None of the above," or someone else, etc.

Florida's voting systems use a paper ballot method of which 63 of the 67 counties use a "blended" voting system with paper tabulator scanners and Direct Recording Electronic (DRE) touchscreen machines to allow compliance with the disability requirements of the Help America Vote Act[6]. The remaining counties (Duval, Hillsborough, Pinellas, and Sarasota) use the AutoMark ballot marking device for disability compliance. Note that the Florida Statutes require compliance with an accessible HAVA compatible method that permits casting a paper ballot by 2012.[7] Blended refers to a voting system that includes both touchscreen and optical scan voting methods coexisting at the same polling location. Blending derives its name from the election management system's ability to accumulate results (i.e., blend) from the two types of precinct tabulators into one set of results broken down by precinct. Election officials perform this task at their central location utilizing their election management system. Blending does not refer to a voting system's ability to accumulate and produce a single set of results at the precinct.

Florida's 67 counties fall into three vendor groups: Elections Systems and Software, Inc. (ES&S), Premier Elections Systems, Inc. (formally Diebold), and Sequoia Voting Systems, Inc. A further subdivision distinguishes ES&S counties that utilize either the ES&S model optical scanners (M100 precinct scanner or the DS200 precinct scanner and the optional Model 650 central count scanner) or the Optech scanners (Optech III-P Eagle precinct scanner and the optional Model IV-C central count scanner). The Premier counties group used either the Accuvote OS precinct scanner or the Accuvote OSx precinct scanner and the optional Premier Central Count scanner. For the 2008 General Election, there were 27 counties that used the ES&S blended voting system with the ES&S scanners and 5 counties that used the ES&S blended voting system with the Optech scanners. The remaining counties were 33 Premier counties and 2 Sequoia counties. Note that the ES&S Optech counties and the Sequoia counties use the "arrow" target selection ballots, while the remaining counties use an "oval" target selection ballots.

Prior to 2008 General Election, there were 15 counties that used 100% touchscreen voting machines consisting of 11 ES&S counties and four Sequoia counties. During 2008, one ES&S

[6] HAVA (Title III, Section 301, Public Law 107-252)
[7] Section, 101.56075(3), Florida Statutes

county and one Sequoia county switched to Premier and another Sequoia county switched to ES&S.

The various voting systems can be grouped into five general types for the 2004 and 2006 General Election: ES&S 100% touchscreen, Sequoia 100% touchscreen, Premier (Diebold) blended system, ES&S blended system with ES&S scanners, and ES&S blended system with Optech scanners. In 2008, there were five general precinct types: ES&S DS200, Sequoia Insight, Premier OS and OSx, ES&S blended system with the ES&S scanners, and ES&S blended system with the Optech scanners. Only the two ES&S blended systems and the Premier OS scanners are essentially the same used during the 2006 General Election.

All 67 Florida counties use optical scan for absentee tabulation. Absentee optical scanners may consist of either one or more high-speed central count scanners or one or more of the certified precinct scanners. Smaller ES&S counties use their precinct scanners for absentee tabulation as a more cost effective alternative to using a high-speed scanner. In 2008, two Premier counties used a high-speed central count scanner (Hillsborough and Okaloosa) and the remaining Premier counties used the AccuVote OS or OSx for scanning and tabulating absentee ballots. The two Sequoia counties used one or more high-speed central count scanners (Optech 400-C).

Discussion

Florida's 67 counties provided the 2008 Presidential election data in a suitable format to support this report. The Division of Elections made minor adjustments in this data to order to arrive at a uniform and consistent set of data. The majority of the data reflects the separation of vote data by voting method (early voting, election day, or absentee) and voting device (optical scanner or touchscreen). However, a few the counties did not extract out their write-ins, blank ballots, overseas, or provisional ballots, and instead these items were aggregated in the precinct level results. In addition, some of the counties had combined the touchscreen votes with the optical scanner group.

Fortunately, the counties that aggregated the votes were few and these exceptions are not expected to bias the results. The counties' reports for the total number of touchscreen ballots represented 0.1% of the total state ballots cast. Therefore, this report does not present the comparison of these two voting methods (optical scanners and touchscreens).

Note that some of the counties' reported voter history was different from Department of State's webpage indicated as voter turnout. Apparently, these counties had difficulty integrating voter history; for example, a change in the voter's county after the election. The counties' reports and Department of States' reconciliation of the number of ballots cast may not agree with the counties' voter history.

Presented below are the summary results of the comparisons of the 2004 and 2008 data. This is the best apples-to-apples comparison, as the race of interest is the same and the voting methods are similarly distributed among the Florida counties. The 2008 raw data and consolidated results presented in Tables 1 to 8 are contained in a MS Excel spreadsheet. The tables include the population standard deviation that provides a measure of the dispersion of the counties'

percentage mean. The spreadsheet is available on the Division of Elections website at: http://doe.dos.state.fl.us/reports/index.shtml

Nomenclature:

AB	Absentee Ballot
ED	Election Day
EV	Early Voting
OS	Optical Scan
TS	Touchscreen
OV	Overvote
UV	Undervote
I WI	Invalid write-in

Table 1
2008 Presidential race compared to 2004 General Election
"No Valid Vote" by voting system

Voting System	Type	No. of Counties[2]	2004 President	Type	No. of Counties	2008 President
ES&S[1]	100% TS & OS AB	11	0.46%	ES&S DS200[6]	13	0.92%
Sequoia[1]	100% TS & OS AB	4	0.46%	Sequoia Insight[7]	2	0.74%
Premier[3]	Blended	30	0.28%	Premier OS & OSx	33	0.57%
ES&S[4]	Blended ES&S	14	0.52%	Blended ES&S	14	0.89%
ES&S[5]	Blended Optech	7	0.52%	Blended Optech	5	0.60%
	State-wide average[8]		0.41%			0.75%
	County % mean[9]		0.45%			0.74%
	% Standard Deviation[10]		0.19%			0.33%

Notes:

1 ES&S and Sequoia 100% TS groups used optical scanners for absentee and provisional ballots.

2 Baker County's under and overvote rate for the Sequoia Optech optical scan system is not included in the above 2004 data in order to maintain comparable data across the five types of voting systems.

3 Premier (formally Diebold) had 30 counties during the 2004 General Election and during 2005 one county switch from Sequoia Optech to Premier (Baker). Premier added two additional counties (Hillsborough and Sarasota) in 2008. In addition, Hillsborough & Sarasota used the Accuvote OSx for precinct count scanners and the AutoMark ballot marker to comply with HAVA. The remaining Premier counties used the AccuVote OS precinct count scanners and the AccuVote TSx touchscreen to comply with HAVA.

4 ES&S blended counties using the ES&S scanners (M100 and optional M650) have the same county base for 2008.

5 ES&S blended counties using the Optech scanners (IIIp Eagle and optional IVc) have the same county base for 2008, except two counties that upgraded for the DS200 (Escambia and Orange).

6 ES&S's former 100% touchscreen counties have the same county base except for their change to the DS200 optical scanners and excluded Sarasota and added Escambia, Orange, and Pinellas. Also, Pinellas uses the AutoMark ballot marking device for compliance with HAVA and the remaining counties used the iVotronic touchscreen for compliance with HAVA.

7 Sequioa's formerly 100% touchscreen counties changed to the Optech Insight Plus scanner, except one county (Pinellas) changed to ES&S with the DS200 and the other (Hillsborough) changed to Premier. The two remaining counties (Indian River and Palm Beach) use the AVC Edge touchscreen for compliant with HAVA.

8 State-wide average is consistent with previous over and undervote reports with the average based on the state-wide results and then divide by the ballots cast in percentage.

9 County-wide mean is based on the percentages of each county's results.

10 Population standard deviation is based on the counties percentages.

Table 2

2008 Presidential race compared to 2004
Undervote and overvote rate by voting system

Voting System	Type	No. of Counties	2004[1] President UV	2004[1] President OV	Type	No. of Counties	2008 President UV	2008 President OV
ES&S	100% TS & OS AB	11	0.43%	0.03%	ES&S DS200	13	0.25%	0.47%
Sequoia	100% TS & OS AB	4	0.40%	0.06%	Sequoia Insight	2	0.30%	0.27%
Diebold	Blended	30	0.24%	0.03%	Premier OS & OSx	33	0.24%	0.09%
ES&S	Blended ES&S	14	0.38%	0.14%	Blended ES&S	14	0.40%	0.20%
ES&S	Blended Optech	7	0.38%	0.14%	Blended Optech	5	0.27%	0.11%
	State-wide mean		0.36%	0.05%			0.26%	0.28%
	County % mean		0.38%	0.07%			0.29%	0.23%
	Standard Deviation		0.14%	0.08%			0.26%	0.14%

Note:

1 The 2004 data does not address invalid write-ins.

Table 3

2008 Presidential race compared to 2004
Early Voting undervote and overvote rate by voting system

Voting System	Type	No. of Counties	2004 President UV	2004 President OV	Type	No. of Counties	2008 President UV	2008 President OV
ES&S	100% TS & OS AB	11	0.34%	NA	ES&S DS200	13	0.17%	0.29%
Sequoia	100% TS & OS AB	4	0.35%	NA	Sequoia Insight	2	0.16%	0.10%
Diebold	Blended	30	0.18%	0.02%	Premier OS & OSx	33	0.16%	0.02%
ES&S	Blended ES&S	14	0.34%	0.08%	Blended ES&S	14	0.35%	0.15%
ES&S	Blended Optech	7	0.29%	0.03%	Blended Optech	5	0.16%	0.03%
	State-wide mean		0.30%	0.01%			0.17%	0.15%
	County % mean		0.33%	0.03%			0.20%	0.12%
	Standard Deviation		0.19%	0.06%			0.34%	0.13%

Table 4

2008 Presidential race compared to 2004
Election Day Voting undervote and overvote rate by voting system

Voting System	Type	No. of Counties	2004 President UV	2004 President OV	Type	No. of Counties	2008 President UV	2008 President OV
ES&S	100% TS & OS AB	11	0.48%	NA	ES&S DS200	13	0.27%	0.54%
Sequoia	100% TS & OS AB	4	0.41%	NA	Sequoia Insight	2	0.29%	0.31%
Diebold	Blended	30	0.24%	0.01%	Premier OS & OSx	33	0.23%	0.04%
ES&S	Blended ES&S	14	0.37%	0.15%	Blended ES&S	14	0.38%	0.23%
ES&S	Blended Optech	7	0.28%	0.04%	Blended Optech	5	0.27%	0.03%
	State-wide mean		0.36%	0.02%			0.26%	0.28%
	County % mean		0.37%	0.06%			0.29%	0.23%
	Standard Deviation		0.17%	0.11%			0.26%	0.19%

Table 5

2008 Presidential race compared to 2004
Absentee undervote and overvote rate by voting system

Voting System	Type	No. of Counties	2004 President UV	2004 President OV	Type	No. of Counties	2008 President UV	2008 President OV
ES&S[1]	100% TS & OS AB	11	0.38%	0.18%	ES&S DS200	13	0.30%	0.59%
Sequoia[1]	100% TS & OS AB	4	0.37%	0.36%	Sequoia Insight	2	0.48%	0.34%
Diebold	Blended	30	0.32%	0.10%	Premier OS & OSx	33	0.35%	0.27%
ES&S	Blended ES&S	14	0.48%	0.15%	Blended ES&S	14	0.57%	0.19%
ES&S	Blended Optech	7	0.77%	0.57%	Blended Optech	5	0.52%	0.45%
	State-wide mean		0.41%	0.23%			0.35%	0.43%
	County % mean		0.50%	0.19%			0.44%	0.37%
	Standard Deviation		0.29%	0.20%			0.44%	0.25%

Note:

1 ES&S and Sequoia 100% TS groups used optical scanners for absentee ballots.

Table 6

2008 Presidential race compared to 2004
Provisional Voting undervote and overvote rate by voting system

Voting System	Type	No. of Counties	2004 President UV	2004 President OV	Type	No. of Counties	2008 President UV	2008 President OV
ES&S	100% TS & OS AB	11	0.63%	0.15%	ES&S DS200	13	0.18%	0.33%
Sequoia	100% TS & OS AB	4	3.59%	2.63%	Sequoia Insight	2	0.88%	2.24%
Diebold	Blended	30	0.39%	0.34%	Premier OS & OSx	33	0.47%	0.82%
ES&S	Blended ES&S	14	0.68%	2.05%	Blended ES&S	14	0.74%	1.23%
ES&S	Blended Optech	7	0.75%	0.17%	Blended Optech	5	0.28%	1.14%
	State-wide mean		1.09%	0.69%			0.39%	0.76%
	County % mean		1.35%	0.35%			0.51%	1.15%
	Standard Deviation		6.33%	1.05%			3.24%	2.80%

Table 7 presents the comparison of the invalid write-in vote for 2002 and 2006 Governor's race with the 2008 Presidential. The 2004 over and undervote report did not address invalid write-in votes in its analysis. As noted below, the 2008 results show an increase in invalid write-in votes.

Table 7

2008 Presidential race compared to 2002 and 2006 Governor races
Invalid write-in vote rate by voting system

Voting System	Type	No. of Counties	2002 Gov I WI	2006 Gov I WI	Type	No. of Counties	2008 President I WI
ES&S	100% TS	11	0.07%	0.04%	ES&S DS200	13	0.20%
Sequoia	100% TS	4	0.08%	0.05%	Sequoia Insight	2	0.17%
Diebold	Blended[1]	30	0.09%	0.06%	Premier OS & OSx	33	0.25%
ES&S	Blended ES&S	14	0.07%	0.09%	Blended ES&S	14	0.29%
ES&S	Blended Optech	7	0.07%	0.09%	Blended Optech	5	0.21%
	State-wide mean		0.08%	0.06 %			0.22%
	County % mean		0.09%	0.09%			0.22%
	Standard Deviation		0.06%	0.09%			0.09%

Note:

1 Prior to mid-2005 there were 30 Diebold counties. During 2005, Baker County switched from a Sequoia optical scan system to the Diebold blended voting system. Baker County's under and overvote rate for the Sequoia optical scan system is not included in the above 2002 data in order to maintain comparable data across the five types of voting systems.

Table 8 presents the comparison of the 2002 and 2006 Governor's race with the 2004 and 2008 Presidential race to ascertain if the "no valid vote" trend is dominated by the race of interest and/or correlated with time. Again, the 2002 and 2006 "no valid vote" rates include the invalid write-in votes with 0.08% or less and the 2008 invalid write-in votes at 0.22% rate. This implies that if the 2008 results were at the same levels as the 2002 and 2006 invalid write-ins (Table 7) and the 2004 overvote rate (Table 2), then the 2008 results would be near 0.38% in comparison with 0.41% for 2004.

Table 8

2008 General Election compared to 2002, 2004, and 2006 General Elections
"No valid vote" by voting system

Voting System	Type	No. of Counties	2002 Gov	2004 Pres	2006 Gov	No. of Type	Counties	2008 Pres
ES&S	100% TS	11	1.12%	0.46%	1.09%	ES&S DS200	13	0.92%
Sequoia	100% TS	4	1.11%	0.46%	0.96%	Sequoia Insight	2	0.74%
Diebold	Blended[1]	31	0.49%	0.28%	0.78%	Premier OS & OSx	33	0.57%
ES&S	Blended ES&S	14	0.89%	0.52%	1.06%	Blended ES&S	14	0.89%
ES&S	Blended Optech	7	0.56%	0.52%	1.27%	Blended Optech	5	0.60%
	State-wide mean		0.86%	0.41 %	0.98%			0.75%
	County % mean		0.88%	0.46%	1.14%			0.74%
	Standard Deviation		0.47%	0.19%	0.52%			0.33%

Note:

1 Prior to mid-2005 there were 30 Diebold counties. During 2005, Baker County switched from a Sequoia optical scan system to the Diebold blended voting system. Baker County's under and overvote rate for the Sequoia optical scan system is not included in the above 2002 and 2004 data in order to maintain comparable data across the five types of voting systems.

Results:

Concern with the casting method without providing immediate feedback:

As noted in the 2006 over and undervote report, the increasing popularity of absentee voting does pose a dilemma. The requirement for tabulating early voting and election day ballots at the precinct is intended to provide immediate feedback to the voter to minimize latent voter error (e.g., blank ballot and overvoted contests.) This benefit to the voter is nullified by absentee and paper provisional voting. In particular, the "no valid vote" rate for provisional ballots is 1.15% and 0.78% for absentee ballots versus 0.32% for early voting and 0.55% for election day. The least risk to the voter to ensure that their vote is counted is to vote during early voting or on election day.

Identification of problems with the ballot design:

The 2008 General Election results indicate a concern with the 0.75% "no valid vote" rate (Tables 1 to 7.) However, there is no evidence that ballot design is the root-cause, but rather the voting method and the higher number of invalid write-ins.

The ballot target selection for either "oval" or "arrow" appears insignificant. The 2008 results show that the ES&S Optech "arrows" method and the Sequoia "arrows" method are also similar when comparing the overvote and undervote rate and when taken together are similar in "no valid vote" with the "oval" selection target method.

Identification of voting system design problems:

Overall the 2008 General Election went smoothly with no significant problems.

Recommendations for correcting any problems:

The introduction of new technology optical scanners had a minor impact with paper jams. In preparation for the 2009 certification efforts, the Secretary of State met with the three voting system vendors to address this issue.

Conclusion

Considering the results from the Presidential and Gubernatorial races, there appears to be a definite proportional influence that these races have on voter interest, apathy, and/or carelessness. Assuming no other influences, the previous over and undervote 2006 report estimated the state-wide "no valid vote" rate for the 2008 Presidential race would be around 0.49%, which is half that of the 2006 Governor's race. However, the 2008 General "no valid vote" rate was 0.75% – much higher than the earlier prediction.

This report showed that the invalid write-in votes had increased to 0.22% and the increased overvote rate was a result of the change in voting devices. Based on the change in voting devices and assuming the 2002 and 2006 invalid write-in is at this level, the "no valid vote" rate for 2010 Governor's race is expected to be 1.21%.