# *US Count Votes'*
# *National Election Data Archive Project*

# Analysis of the 2004 Presidential Election Exit Poll Discrepancies

http://electionarchive.org/ucvAnalysis/US/Exit_Polls_2004_Mitofsky-Edison.pdf

**Response to the *Edison/Mitofsky Election System 2004* Report**
http://exit-poll.net/election-night/EvaluationJan192005.pdf

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## Abstract

### What is the Main Cause of the Discrepancies between the Official Election Results and the Exit Polls?

The exit pollster of record for the 2004 election was the Edison/Mitofsky[1] consortium. Their national poll results projected a Kerry victory by 3.0%, whereas the official count had Bush winning by 2.5%.[2] Several methods have been used to estimate the probability that the national exit poll results would be as different as they were from the national popular vote by random chance. These estimates range from 1 in 16.5 million to 1 in 1,240[3]. No matter how one calculates it, the discrepancy cannot be attributed to chance.

Edison/Mitofsky disavowed the results of their own poll, saying that the data cannot be construed as evidence that the official vote count was corrupted, and hypothesized that Kerry voters were more amenable to completing the poll questionnaire than Bush voters.

However, Edison/Mitofsky's own exit poll data does not support their theory that a higher exit poll response rate by Kerry voters accounted for the discrepancies between the exit polls and the presidential election results. Using Edison/Mitofsky's data tables we demonstrate that the "reluctant Bush responder" hypothesis is implausible because it is inconsistent with the combination of high response rates and high discrepancy rates among the precincts with the highest percentage for Bush.

### There are Three Primary Explanations for the Discrepancies:

1. **Statistical Sampling Error – or Chance**
   *We agree with Edison/Mitofsky that the first possible cause, random statistical sampling error, can be ruled out.*

2. **Inaccurate Exit Polls**
   *This is the theory that Edison/Mitofsky put forth. They hypothesize that the reason the exit polls were so biased towards Kerry was because Bush voters were more reluctant to respond to exit polls than Kerry voters. Edison/Mitofsky did not come close to justifying this position, however, even though they have access to the raw, unadjusted, precinct-specific data set. The data that Edison/Mitofsky did offer in their report show how implausible this theory is.*

3. **Inaccurate Election Results**
   *Edison/Mitofsky did not even consider this hypothesis, and thus made no effort to contradict it. Some of Edison/Mitofsky's exit poll data may be construed as affirmative evidence for inaccurate election results. We conclude that the hypothesis that the voters' intent was not accurately recorded or counted cannot be ruled out and needs further investigation.*


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[1] Edison Media Research and Mitofsky International

[2] p. 20 "Evaluation of Edison/Mitofsky Election System 2004 report by Edison/Mitofsky Jan. 19, 2005

[3] See Appendix D for the 1 in 16.5 million calculation based on Edison/Mitofsky "Methods Statement - National Election Pool Exit Polls". The probability 1 in 959,000 in the affadavit in Bill Moss vs. George Bush et al. OH Case by Ron Baiman, Ph.D. Economics http://uscountvotes.net/docs_pdf/analysis/OH/Affidavit_04-21_ver2.pdf was based on the sample size for the nationwide poll (state polls are different) given by Edison/Mitofsky on election night. The probability was later revised to 1 in 455,600 based on a new sample size of 12,219 given by Edison/Mitofsky with a "clustering adjustment" of 1.3. Even using the most conservative value of 80% to factor for design effect - an estimate of the additional variance that would have been missed by clustered sampling as opposed to random sampling, the probability of this much discrepancy in the national poll is calculated as 1 in 1,240.

## Introduction

After last November's presidential election, there were thousands of reports of irregularities. Reported problems[4] included:

- voting machine shortages
- ballots counted and recounted in secret
- lost, discarded, and improperly rejected registration forms and absentee ballots
- touch-screen machines that registered "Bush" when voters pressed "Kerry"
- precincts in which there were more votes recorded than registered voters
- precincts in which the reported participation rate was less than 10%
- high rates of "spoiled" ballots and under-votes in which no choice for president was recorded
- a sworn affidavit by a Florida computer programmer who claims he was hired to develop a voting program with a "back door" mechanism to undetectably alter vote tallies

These problems arose in the context of vote recording and counting systems developed, provided, and maintained primarily by a handful of private vendors with partisan ties, and where nonauditable voting equipment which cannot provide assurance that votes are counted as cast, tallied about 30% of the national vote[5]. The crucial question is whether these problems were part of a larger pattern. Were these issues collectively of sufficient magnitude to reverse the outcome of the election, or were they isolated incidents, procedurally disturbing but of little overall consequence?

## Importance of Exit Polls

Under such circumstances we must rely on indirect evidence - such as exit polls, or analysis of election result data - as a check of the overall integrity of the official election results. Without auditability or transparency in our election systems, the role of exit polls as a trigger for further scrutiny is of paramount importance.

## Background

The 2004 exit polls were conducted by Edison Media Research and Mitofsky International (Edison/Mitofsky, or E/M) on contract with major national press and TV news services, operating collectively as the National Election Pool. Edison/Mitofsky conduct exit polls in every state plus a nationwide exit poll. Confidential exit poll data showing John Kerry ahead of George Bush in several key "battleground states" was disclosed to the general public on the afternoon of November 2.

Immediately following the election, the national exit polls showed that Kerry had won the popular

[4] Reports were recorded by non-partisan organizations Vote Watch, Vote Protect, and Voters Unite: www.votewatch.us voteprotect.org www.votersunite.org and by the U.S. House Committee on the Judiciary, "Preserving Democracy: What Went Wrong in Ohio" (January 5, 2005)

[5] Simon, J. and Baiman, R., "The 2004 presidential Election: Who Won The Popular Vote? An Examination of the Comparative Validity of Exit Poll and Vote Count Data" , January 1, 2005, p. 5-6 http://freepress.org/images/departments/PopularVotePaper181_1.pdf

vote by a margin of 3.0%.[6] However, by the morning of November 3rd, the official vote counts showed Bush defeating Kerry by 2.5% in the popular vote.

This discrepancy between exit polls and the official election results has triggered a controversy which has yet to be resolved.

Shortly after the exit poll disparity was noted, the Edison/Mitofsky group took the position that their own projections could not be taken as an indication of error in the official vote count. The theory they put forward to explain the disparity was that more of the Bush voters had declined to be interviewed for the exit polls, while more of the Kerry voters had completed the poll questionnaire.[7]

Immediately after the election, those skeptical of Edison/Mitofsky's explanation tried to obtain the precinct-level unadjusted exit poll data to independently test Edison/Mitofsky's explanation, but the raw data has not, to this day, been released. In the absence of raw data, analyses were done using "screen captures" of data published to the Internet on election night[8]. One such analysis of unadjusted exit poll data was done by Ron Baiman[9]. Baiman found that statistically significant discrepancies of exit poll results from reported election outcomes were concentrated in five states, four of which were key battleground states.

**Is this merely a coincidence? How much of a coincidence was it?**

Baiman concluded that the probability that these discrepancies would simultaneously occur in just the most critical states of Ohio, Florida, and Pennsylvania (rather than in any other randomly selected group of three states), is less than 1/330,000. This analysis agrees with an earlier calculation by Steven Freeman showing that the probability that random chance accounted for simultaneous exit poll discrepancies in Florida, Pennsylvania and Ohio was well outside of the realm of statistical plausibility.[10]

On January 19, 2005, Edison Media Research and Mitofsky International released a 77-page report "Evaluation of Edison/Mitofsky Election System 2004". The Edison/Mitofsky report acknowledged widespread discrepancies between their exit polls and official counts, admitted that the differences were far greater than can be explained by sampling error, and asserted that this disparity was "most likely due to Kerry voters participating in the exit polls at a higher rate than Bush voters" (p. 3).

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[6] p. 20,"Evaluation of Edison/Mitofsky Election System 2004" prepared by Edison Media Research and Mitofsky International for the National Election Pool (NEP) Jan. 19, 2005

[7] Election survey analysts ordinarily assume that official election results are the objective standard against which their own findings must be weighed, and perhaps found wanting. Edison/Mitofsky's willingness to find fault with their own methods and results is consistent with professional norms and practices.

[8] See Appendix B

[9] Affidavit in Bill Moss vs. George Bush et al. Ohio Case by Ron Paul Baiman, Ph.D. Economics, posted at http://electionarchive.org

[10] Freeman, S.F., "The Unexplained Exit Poll Discrepancy" A Research Report from the University of Pennsylvania, Graduate Division, School of Arts & Sciences, Center for Organizational Dynamics. December 29, 2004 http://center.grad.upenn.edu/center/get.cgi?item=exitpollp (originally published as a Working Paper on November 12, 2004).

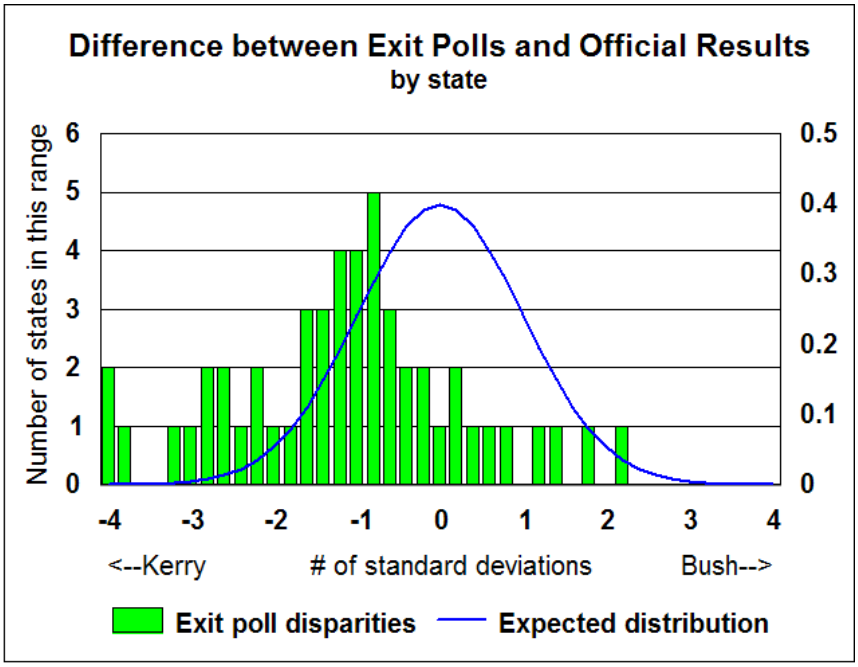
Did Edison/Mitofsky's January 19th report support their assertion that Bush voters were more reluctant to participate in exit poll surveys than Kerry voters? Did their analysis confirm the "Reluctant Bush Responder" hypothesis?

# ANALYSIS

**I. Explanation #One - Random Error**

**Definition of WPE:** "Within Precinct Error" is the average of the difference between the percentage margin between the leading candidates in the exit poll and the actual vote for all sample precincts in a state. The sign of the WPE gives the direction of the error. A negative number means that the exit polls were more favorable to Kerry than the actual election results, while a positive number means the exit polls were more favorable to Bush than the actual election results. WPE can be roughly thought of as the percentage discrepancy between election results and exit poll results within sampled precincts.

Edison/Mitofsky WPE (within precinct error) scores for difference between the election results and exit polls by state are clearly skewed:




Seven of fifty states have standardized values less than –2.7, meaning that each of them had less than 1% probability of having the reported difference between exit polls and election results occurring by chance. The probability of seven values being less than -2.7, approximated via standard normal distribution probabilities is 0.0035**7. For the t-distribution with 40 degrees of freedom, a more conservative value is 0.005**7. A full comparison of the exit polls with the null distribution (blue curve) via a Shapiro-Wilk test yields a probability that is microscopically small that such exit poll discrepancies could occur by chance.

Aside from three outlier states (on the left) the data appear to be normally distributed with the mean

shifted 1.0 standard deviations toward Kerry. The data without these three passes the Shapiro-Wilk test for normality (p=.4), with a shifted mean.

We agree with Edison/Mitofsky, as stated in their report, that random chance as a possible explanation for discrepancies between exit polls and official election results can be dismissed.

*Having eliminated random chance as a cause of the discrepancies between election and exit poll results, two hypotheses remain to explore: Exit polls were subject to a consistent bias or the official vote count was corrupted.*

## II. Explanation #Two - Exit Poll Error

### A. Exit Poll Science

Exit polling is a well-developed science, informed by half a century of experience and continually improving methodology[11]. Edison/Mitofsky samples voters for a nationwide exit poll as well as for each state's exit poll.

**Best Practices Exit Poll Methodology involves three steps:**

1. *Choose a set of representative precincts that mirrors the state as a whole in demography and historic voting patterns. ("out of precinct" sampling)*
2. *Randomly select and interview voters from those precincts for polling as they leave the polling place. ("within precinct" sampling)*
3. *Algebraically weight to correct for the observed demographic composition of the sample. For example, re-balance by race and gender in this process to assure a representative sampling of the state.*

**Were the Right Precincts Sampled?**

To confirm that steps number 1 and 3 were done correctly, *official vote tallies* from the sampled precincts were substituted by Edison/Mitofsky for exit poll results in their weighting formulas, to see if the results would correctly "predict" statewide voting patterns. This procedure (E/M pp. 28-30) confirms that steps number 1 and 3 worked well. The selected precincts accurately predicted the results in their respective states, with only a small observed bias (0.3%) which was actually in the *opposite direction* to the bias that resulted when exit poll numbers were used.

**Were Voters Randomly Selected and Interviewed?**

Problems with step number 2, improper selection of voters, can cause within-precinct error (WPE[12]). Edison/Mitofsky seek to explain the overall disparity between exit polls and official election results in

[11] *Polling and presidential Election Coverage*, Lavrakas, Paul J, and Holley, Jack K., eds., Newbury Park, CA: Sage; pp. 83-99.

[12] See prior definition of WPE on p. 7 in this document.

terms of WPE. They calculate that the required shift toward Kerry in the exit polls must have been 6.5%. They note that this number is greater than any WPE from past presidential elections going back more than 20 years, to a time when polling science was less sophisticated and less reliable than at present. They also note that this 6.5% WPE stands out in comparison to an average 1.9% WPE from 2004 state primaries exit polls.

**Adjusting the Exit Polls using Reported Election Results**

The E/M report claims that all of the error is "within precinct error (WPE)" because using reported precinct level election results with a "Sample Precinct Model" (SPM) gives close to reported results (p. 28-30). But this does not necessarily follow because the SPM may use reported election results (p. 9), and may be adjusting the weights over time based on these reported results. This implies that computations with these new weights may not be fully "unadjusted" predictive exit poll estimates.

To the extent that SPM adjustments are based on reported election results, exit poll discrepancies derived from weights that "have not been adjusted" may be out of precinct. This leaves open the possibility that "central office mis-tabulation", and/or "discriminatory voter suppression", that are not taken into account when using precinct weights that are derived from past voter participation rates to calculate state level exit poll results, could explain part of the discrepancy. Access to the raw precinct level data and weights used to calculate final unadjusted state level exit polls, is necessary to investigate this hypothesis.

**The "Reluctant Bush Responder" (rBr) hypothesis**

The E/M report, however, explains the WPE with the following statement (p. 31):

> *"While we cannot measure the response rate by Kerry and Bush voters, hypothetical response rates of 56% among Kerry voters and 50% among Bush voters overall would account for the entire Within Precinct Error that we observed in 2004."*

This, apparently, is the basis for their statement in the Executive Summary (p. 4), "It is difficult to pinpoint precisely the reasons that, in general, Kerry voters were more likely to participate in the exit polls than Bush voters."

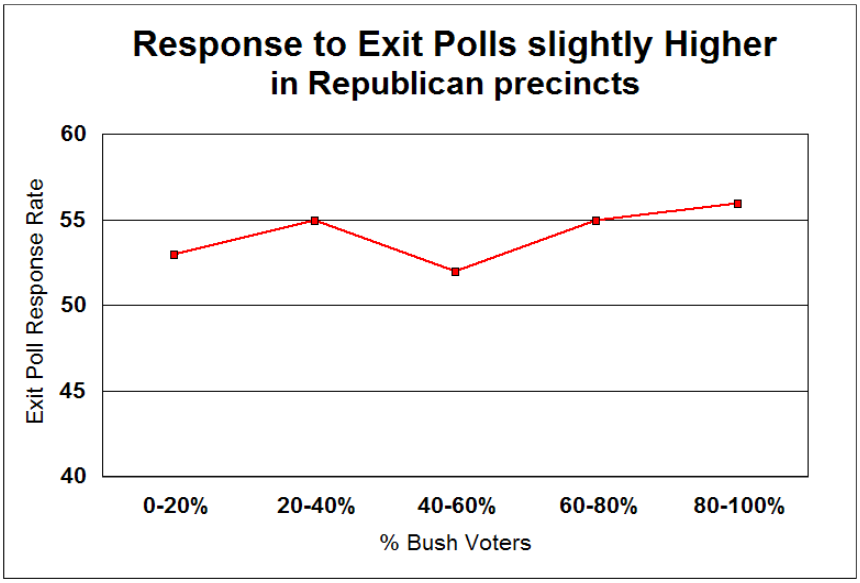
No data in the E/M report supports the hypothesis that Kerry voters were more likely than Bush voters to cooperate with pollsters and, in fact, the data provided by E/M suggests that the opposite may have been true.

| Table 1: Partisanship Precinct Data given in the Edison/Mitofsky Report (pp. 36, 37) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Partisanship of Precinct by Election Results | | Number of Precincts | mean WPE exit poll discrepancy | median WPE exit poll discrepancy | Combined Response Rate | Refusal Rate | Miss Rate |
| 80< Kerry <=100% | 0< Bush <=20% | 90 | 0.3% | -0.4% | 53% | 35% | 12% |
| 60< Kerry <=80% | 20< Bush <=40% | 165 | -5.9% | -5.5% | 55% | 33% | 12% |
| 40< Kerry <=60% | 40< Bush <=60% | 540 | -8.5% | -8.3% | 52% | 37% | 11% |
| 20< Kerry <=40% | 60< Bush <=80% | 415 | -6.1% | -6.1% | 55% | 35% | 10% |
| 0< Kerry <=20% | 80< Bush <=100% | 40 | -10.0% | -5.8% | 56% | 33% | 11% |

*The following analysis by US Count Votes is based on the data in the above Table 1 which is provided in the Edison/Mitofsky report. We will use it to show that it is not plausible that the "Reluctant Bush Responder" hypothesis explains the exit poll discrepancy in the November 2004 presidential election.*

### B. Exit Poll Discrepancies Rise with Concentration of Bush Voters

The reluctant Bush responder hypothesis would lead one to expect a higher non-response rate where there are many more Bush voters, yet Edison/Mitofsky's data shows that, in fact, the response rate is slightly higher in precincts where Bush drew ≥80% of the vote (High Rep) than in those where Kerry drew ≥80% of the vote (High Dem).




The chart above was constructed from data within the E/M report (p. 37). This data bears directly on the plausibility of the report's central hypothesis, and it goes in the wrong direction. In precincts with higher numbers of Bush voters, response rates were slightly *higher* than in precincts with higher number of Kerry voters.

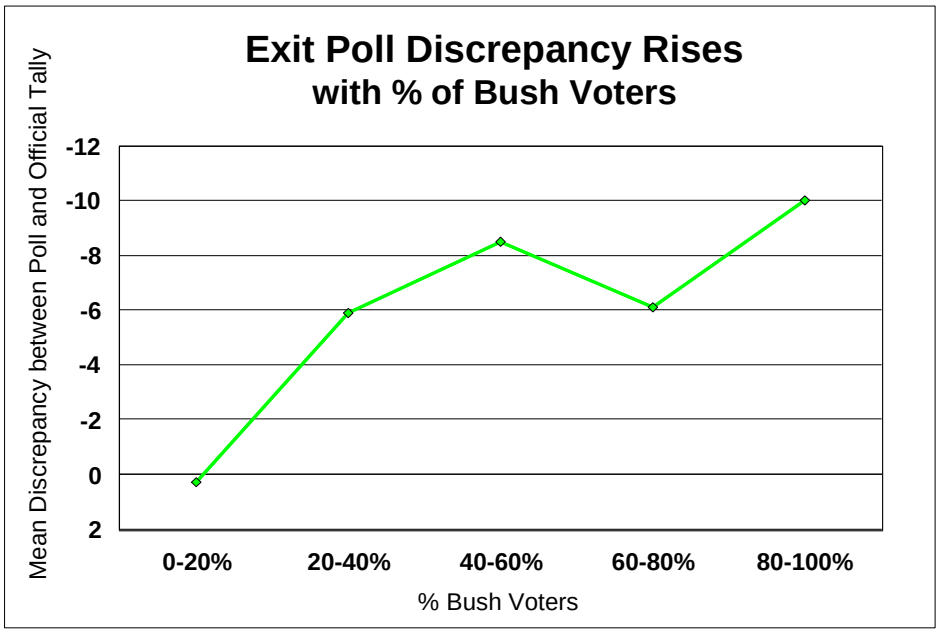
Precincts in which Bush supporters were dominant actually completed the poll questionnaire at a rate higher than precincts in which Kerry dominated. This fact undermines the report's central premise that Kerry supporters were more likely than Bush supporters to participate in the exit poll.

**"Reluctant Bush Responder in Mixed Political Company" (rBrmpc) hypothesis**

Yet it is not conclusive proof that the E/M hypothesis is wrong, because some have hypothesized that Bush supporters were more diffident about expressing their views in mixed political company than Kerry supporters.

It has been suggested that the Bush supporters participated at high rates in precincts where they were surrounded by other Bush supporters, while Bush supporters in predominantly-Kerry precincts were more reticent than their counterpart Kerry supporters voting in predominantly Bush precincts. This "reluctant Bush exit poll participant in predominantly Kerry precincts" hypothesis is also inconsistent with the E/M data.

If the polls were faulty because Bush voters were shy in the presence of Kerry voters and less likely to cooperate with pollsters, then the polls should be most accurate in those precincts where Bush voters were in the overwhelming majority and where exit poll participation was also at its maximum.




What we find is just the opposite: in fact, *the mean exit poll discrepancy was dramatically higher in Bush strongholds than in Kerry strongholds (-10.0 versus 0.3).* In precincts with 80-100% Bush voters, where exit poll participation reached its highest level (56%), there was a full 10% mean difference between official vote tallies and the exit poll results.

**Alternate hypothesis: "Bush Strongholds have more Vote-Count Corruption" (Bsvcc)**

An alternative hypothesis that is more consistent with the data is that corruption of the official vote count occurred most freely in districts that were overwhelmingly Bush strongholds.

If Edison/Mitofsky would release the detailed results of their poll to the public then much more could be said about this hypothesis, and the suspicious precincts could be identified. If E/M does not release its list of sampled precincts, US Count Votes believes it will still be possible to rigorously test the hypothesis that the vote counts were corrupted by assembling and analyzing a precinct-level nationwide database containing detailed election results, voting equipment information and demographic data.

*Higher exit poll response rates and higher exit poll discrepancies occurred in Bush strongholds. E/M's own data contradict both the rBr and the rBrmpc hypotheses and support the Bsvcc hypothesis.*

## C. Implausible Exit Poll Participation Patterns Are Needed to Satisfy E/M's data.

The Edison/Mitofsky Report states:

> *"Our investigation of the differences between the exit poll estimates and the actual vote count point to one primary reason: in a number of precincts a higher than average Within Precinct Error (WPE) most likely due to Kerry voters participating in the exit polls at a higher rate than Bush voters." (Page 3)*

It is mathematically possible to construct a set of response patterns for Bush and Kerry voters while faithfully reproducing all of Edison/Mitofsky's "Partisanship Precinct Data" given in Table 1. (Appendix A)

The following Table 2 shows the required calculated Bush and Kerry response rates if we assume 90% Bush voters in 80 - 100% Bush precincts, 70% average Bush voters in 60-80% Bush precincts, and so forth.

| Table 2: Calculated Required Bush & Kerry Response Rates using midpoints of precinct intervals as the assumed Bush/Kerry voter percentages in partisan precincts. | | | | Assumed % of Kerry/Bush voters in partisan precincts | | Required Response Rates for entire sample | |
|---|---|---|---|---|---|---|---|
| **Partisanship of Precinct based on Election Results** | | **mean WPE** | **Response Rate** | **Bush** | **Kerry** | **Bush** | **Kerry** |
| 0< Bush <=20% | 80< Kerry <=100% | 0.3% | 53% | 10% | 90% | 53.8% | 52.9% |
| 20< Bush <=40% | 60< Kerry <=80% | -5.9% | 55% | 30% | 70% | 49.6% | 57.3% |
| 40< Bush <=60% | 40< Kerry <=60% | -8.5% | 52% | 50% | 50% | 47.6% | 56.4% |
| 60< Bush <=80% | 20< Kerry <=40% | -6.1% | 55% | 70% | 30% | 52.6% | 60.6% |
| 80< Bush <=100% | 0< Kerry <=20% | -10.0% | 56% | 90% | 10% | 52.9% | 84.0% |

The visual chart is below.

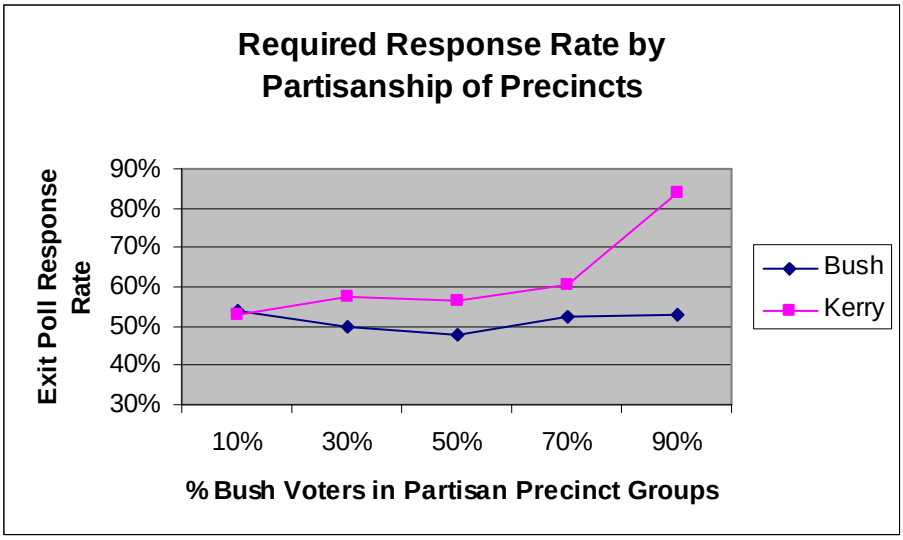



Chart based on Table 2 above

Notice, that to reconcile the "Edison/Mitofsky Partisanship Precinct" data (Table 2) three oddities must occur:

1. There must have been a *very* large spread of response rates of 31% for Kerry supporters from a low of 52.9% to a high of 84% - that is *five times* greater than the spread among Bush supporters of only 6%, from a low of 47.6% to a high of 53.8%.

2. Kerry voters must have responded their highest of 84% in *Bush strongholds*, while responding least, 53%, in Kerry strongholds.

3. The difference in response rates between Bush and Kerry voters must be over 30% in Bush strongholds, much higher than the 6% overall response rate difference suggested by Edison/Mitofsky and much higher than the WPE.

This data contradicts previous experience and observations of this election that voters finding themselves in the minority in a local venue (and particularly a dwarfed minority) tend to be *less* willing to respond to exit poll interviewers, not more as this data requires. Certainly we would not expect the Kerry voter response rate to soar to over 84% in precincts where Bush voters outnumber them by *at least* four-to-one. Conversely, we would not expect the Kerry voter response rate to be at its lowest (53%) in precincts where Kerry voters were most numerous.

One might reasonably ask if such oddities persist when employing other assumptions of the percentage of Bush and Kerry voters in each partisan precinct grouping. The answer is "Yes" as we show in Appendix A.

*The required pattern of exit poll participation by Kerry and Bush voters to satisfy the E/M exit poll data defies empirical experience and common sense under any assumed scenario.*

**Implausible Patterns of Exit Poll Participation as a Proportion of Those Asked to Take the Polls Are Needed to Satisfy E/M's data.**

In the prior section, we computed the response rates as a proportion of those in the *sample* who completed the exit poll - not the proportion of those who were actually invited to respond. Now we calculate the Kerry and Bush voter response rates as a proportion of those actually asked to complete the exit poll.

A voter was "*missed*" if he or she could not be approached, perhaps when a cluster emerges from the voting area together and only a limited few can be approached. Edison/Mitofsky define the "*miss rate*" as the percentage of those voters who *should have* been interviewed according to the selection rule, but were not[13]. In each precinct partisanship grouping:

Miss Rate + Completion/Response Rate + Refusal Rate = 100%.

It is reasonable to assume that voters were missed more or less at random so we can assume that the miss rates are roughly the same for Bush and Kerry supporters. The fact that the miss rate is constant across precinct types while the refusal and response rates are not (according to the Edison/Mitofsky explanation) suggests that the miss rate cannot be highly correlated with the refusal or response rates.

Kerry and Bush response rates calculated as a proportion of those who were asked to take the polls are similarly *implausible*.

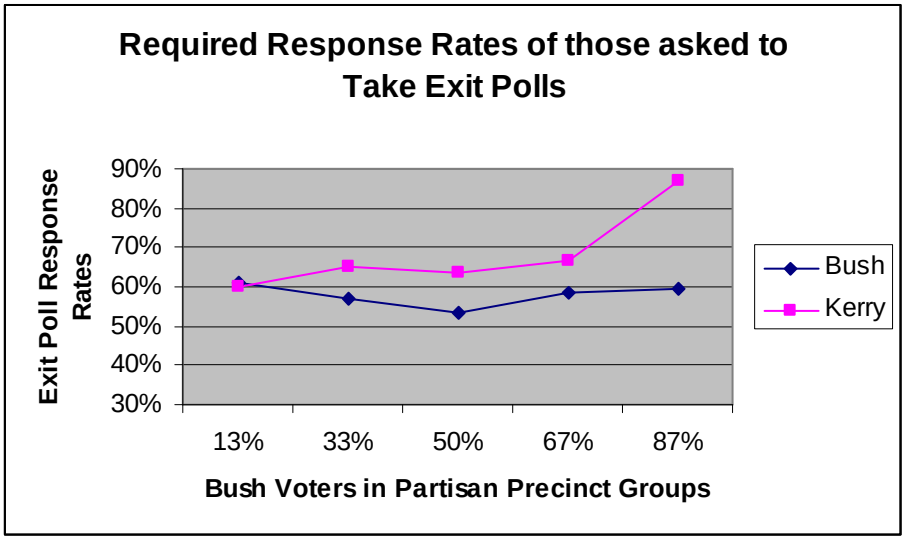



Chart based on Appendix A: Table 3 - includes adjustment for "miss rate"

The above chart uses the normal curve to select likely Kerry and Bush voter ratios within partisan precinct groupings. The range in the calculated required response rate among Kerry voters of 27% is over three times that of the range in response of 7.46% of Bush voters! The differences in response rates between Bush and Kerry voters in any partisan group having significant mean WPEs, are greater than the 6% overall, and are also greater than the mean WPEs for each partisan group.[14]

[13] Exit poll selection rules instruct exit poll field staff to, for example, "interview every 10th voter".
[14] See Appendix A

E/M's exit poll data not only requires a “reluctant Bush responder” syndrome, it also requires a "high range of Kerry voters response rates that varies far more than Bush voters'" plus a "Kerry voters respond most in Bush strongholds" theory.

*Once again, there is an implausible set of required response rates for Kerry and Bush supporters given the Edison/Mitofsky precinct partisanship data in Table 1.*

## ***Very*** **Implausible Patterns of Exit Poll Participation Are Required to Satisfy E/M's data in 80-100% Bush Precincts.**

One clue in the E/M data offers insight into a possible cause of the discrepancies they report: ***The Mean vs. the Median in Bush Strongholds***

In 80-100% Bush strongholds the Median WPE of -5.9% is very different from the Mean WPE of -10.0%. This suggests that the mean in these Bush strongholds was pulled up by a small number of precincts with extremely high WPEs. For this to occur there must have been some precincts in which the WPE was very negative and the exit poll estimated a *much* bigger vote for Kerry than the election results recorded. Because the median WPE is -5.8%, we know that in half these precincts the error was less than -5.8%. Therefore, the WPE discrepancy in half of the data must conservatively be estimated to be at least average -14.2% WPE[15].

The following table shows the required response rates calculated for these “high-Bush” precincts.

| Table 5: Sample Calculated Required Bush & Kerry Response Rates in Bush strongholds sampled which had over -14.2% WPE discrepancies | | | | Assumed % of Kerry/Bush voters in partisan precincts | | Required Response Rates for entire sample | | Required Response Rates of voters who were asked to take the exit poll | |
|---|---|---|---|---|---|---|---|---|---|
| Partisanship of Precinct based on Election Results | | mean WPE E | Response Rate R | Bush b | Kerry k | Bush B | Kerry K | Bush B | Kerry K |
| 80< Bush <=100% | 0< Kerry <=20% | -14.2% | 56% | 91% | 9% | 51.63% | 100.18% | 58.7% | 113.8% |
| 80< Bush <=100% | 0< Kerry <=20% | -14.2% | 56% | 88% | 12% | 51.48% | 89.13% | 58.5% | 101.3% |
| 80< Bush <=100% | 0< Kerry <=20% | -14.2% | 56% | 86% | 14% | 51.38% | 84.40% | 57.7% | 94.8% |
| 80< Bush <=100% | 0< Kerry <=20% | -14.2% | 56% | 83% | 17% | 51.21% | 79.39% | 56.9% | 88.2% |
| 80< Bush <=100% | 0< Kerry <=20% | -14.2% | 56% | 81% | 19% | 51.09% | 76.93% | 57.4% | 86.4% |

In these "high-Bush" stronghold precincts for which the exit polls must have under-estimated the margin between Bush and Kerry by at least 14.2%, the minimum Kerry supporter response rates under these very conservative mathematical estimates would be higher than **86%** of those who were asked to take the poll. The corresponding Bush supporter response rate would be only 57.4% - a huge gap of 29% that is totally at odds with empirical experience. The difference in response rates for Bush and Kerry voters conservatively must exceed 25% and is in all cases much higher than the WPEs.

[15] There were 40 precincts with mean error of -10.0% which gives a total error sum of -400; -5.8% as a median divides the precincts into two sets of 20; assume the top half error is the highest possible (20 x -5.8% = -116); this leaves -284 for the bottom half; -284/20 = -14.2%. Clearly there were some highly skewed precincts in the Bush strongholds, although the 20 precincts (in a sample of 1250) represent only about 1.6% of the total.

Edison/Mitofsky's data may be better explained by the hypothesis that vote-counting anomalies occurred disproportionately in "high-Bush" precincts. To help test this hypothesis, in the absence of E/M's raw data, US Count Votes is planning an in-depth statistical analysis of precincts with high Bush and high Kerry vote totals once our new nationwide precinct-level vote database is complete.

*When Edison/Mitofsky's explanation is checked against their own data using conservative assumptions, it requires highly suspect Kerry voter exit poll behaviors in "high-Bush" precincts.*

**Even When Using Assumptions that Minimize the Differences between Bush and Kerry Response Rates, Participation Patterns Remain Implausible.**

In the absence of Edison/Mitofsky's raw data, our calculations in Section C above were based on several different estimates of the mean official vote tally (percentage of Bush and Kerry voters) in each partisan class of sample precincts. It is reasonable to check to see whether there is *any* assumed mean value of the official vote counts that minimize the inexplicable differences between Bush and Kerry response rates cited above. Our calculations in Appendix A, Table 4 minimize the differences but in doing so it requires:

1. Response rates of Kerry *and Bush voters* that both vary widely by partisanship of precincts. The spread of response rates for Kerry and Bush voters must be 18% and 14% respectively.

2. Response rates of Kerry *and Bush voters* that both are at their *highest in strongholds of the opposing candidate!*

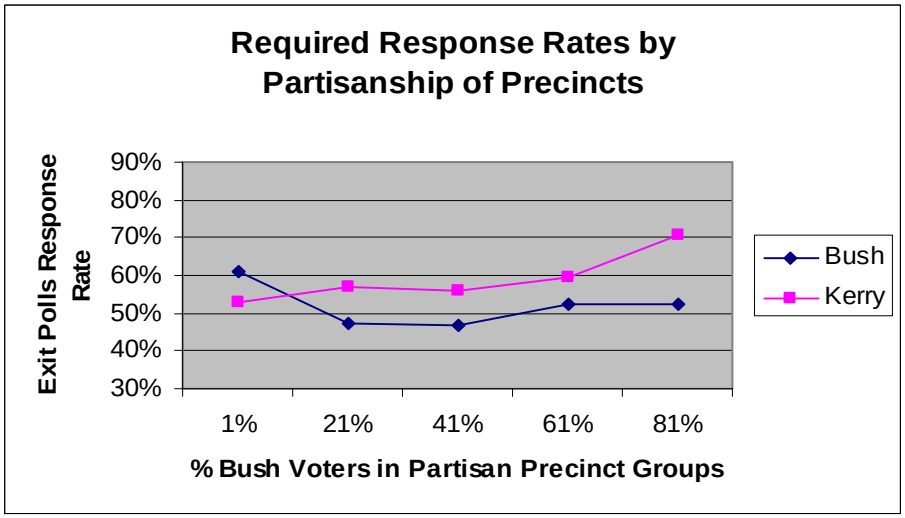



Chart based on Appendix A: Table 4

In order to make the Bush voter exit poll response pattern correspond to the Kerry voter exit poll response pattern, we had to reduce the proportion of Bush supporters in each type of precinct to the bare minimum.

*Very surprising patterns of partisan response rates to exit polls are required by **both** Kerry and Bush voters when we select values to minimize the differences between Bush and Kerry voters' exit poll response rates.*

*In sum, there are no values of proportions of Bush and Kerry voters which can be chosen that would result in plausible response rate patterns, and that satisfy the exit poll data given by E/M.*

## D. The Same Exit Polls More Accurately Projected the Senate Races

The Senate and presidential races were both questions on a single exit poll survey. If Bush supporters were refusing to fill out this survey as hypothesized, the accuracy of the exit poll should have been just as poor in the Senate races as it was in the presidential race. The presidential and Senate poll results derive from exactly the same responders.

In 32 states, Senate elections took place on the same ballot with the presidential race. The exit polls were more accurate for Senate races than for the presidential race, including states where a Republican senator eventually won (pages 19-24).

The Senate polls were significantly more accurate: paired t-test, $t(30) = -2.48$, $p < .02$, if outlier North Dakota is excluded. Therefore the Mitofsky/Edison hypothesis of reluctant Bush poll responders is irrelevant to explain the discrepancies between the exit poll and election results in the presidential race.

This difference between the accuracy of the Senate and presidential exit poll is puzzling. Historic data as well as the exit polls themselves indicate that the ticket-splitting rate is low. It is reasonable to expect that the same voters who voted for Kerry were also the mainstay of support for the Democratic candidates in the Senate.

Why should polls based on these same participants be more accurate in predicting Senate results than in predicting the presidential vote? In the absence of raw, unadjusted precinct level exit poll data, this question may best be answered by comparative analysis of official precinct-level presidential vote tallies with tallies from Senate and other races. Patterns of anomalies in vote counting in US Senate races should also be searched for, and investigated if found.

*There is no logic to account for non-responders or missed voters when discussing the difference in the accuracy of results for the Senate versus the presidential races in the same exit poll.*

## E. Other Possible Reasons for Exit Poll Bias

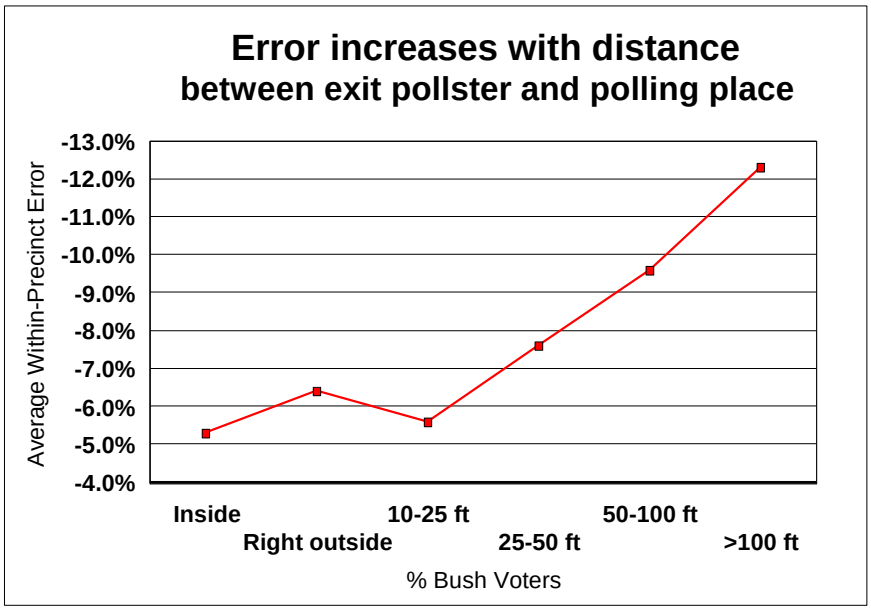
Traugott, Highton, and Brady in their study of the exit polls[16] juxtaposed their discussion of the discrepancies between election and exit poll results in the presidential race with their discussion of other causes for WPE (within precinct errors) which were discussed in E/M's report (pp. 37-46), thus implying that these explained the exit poll discrepancies in the presidential race.

While this data is useful for E/M in planning future polls, but it is almost certainly irrelevant to the 2004 exit poll discrepancy. Here is a table of the highest and "lowest" WPEs for each factor given by E/M.

Table 6: Other Factors with influence amount of WPE (within precinct error)

| | **Other Factors Related to WPE** | Lowest overall mean WPE | Highest mean WPE |
|---|---|---|---|
| 1 | distance from polling location | -5.3 (within the poll location) | -12.3 |
| 2 | possible to approach every voter? | -6.0 (yes) | -8.0 (no) |
| 3 | cooperative precinct officials | -6.4 (yes) | -8.0 (no) |
| 4 | cooperative voters | -6.2 (yes) | -10.2 (no) |
| 5 | outside interference with interviewing | -5.5 (no) | -6.6 (yes) |
| 6 | population size of town or city | -3.6 (rural) | -8.1 |
| 7 | voting equipment | -2.2 (paper ballot) | -10.6 |
| 8 | weather affected interviews? | -6.2 (no) | -7.3 (yes) |
| 9 | number of precincts per poll. location | -6.3 (1) | -13.6 (4 or more) |
| 10 | precinct in a swing state? | -6.1 (no) | -7.9 (yes) |

First, we notice that even the lowest mean WPE errors for most factors are very high, even in the best of circumstances. We can therefore eliminate most of the above factors from consideration, leaving only population size of town or city, and voting equipment to consider.




[16] http://elections.ssrc.org/research/ExitPollReport031005.pdf

For an example of why we can easily eliminate these factors, let us take "distance from polling place". The number of precincts where the pollsters were placed far from the polling station was small. The discrepancies that E/M seek to explain are already fully present even in the precincts where pollsters were optimally placed. Most of this bias is apparent even in the 75% of precincts where the pollster was allowed to conduct his survey just outside or within the building.

Hand counted paper ballots were used primarily in rural districts in only 3% of sampled precincts altogether, so had very little effect on the overall discrepancies. All voting methods produced higher mean WPEs in urban areas with over 50,000 population.

Rural areas constituted 24% of precincts sampled. All other "population size" precinct groups had mean WPE of at least -5.0, with the highest mean WPE of -7.9 in suburbs which constituted 39% of precincts.

*No other factors relating to WPE (within precinct error) were given in the Edison/Mitofsky report that would explain the systematic discrepancies between the election results and the exit poll results in the presidential race.*

## III. Explanation #Three - Inaccurate Election Results

If the discrepancies between exit poll and election results cannot be explained by random sampling error; the "Reluctant Bush Responder" hypothesis is inconsistent with the data; and other exit polling errors are insufficient to explain the large exit polling discrepancies, then the only remaining explanation – that the official vote count was corrupted – must be seriously considered.

Edison/ Mitofsky say in their Executive Summary (p. 3), "Exit polls do not support allegations of fraud …" but they do not seriously consider the hypothesis of election fraud. Instead, E/M use the word "error" consistently to analyze potential problems with the *exit polls*, always assuming the correctness of the *election results* without providing supporting evidence for that assumption.

The E/M exit poll report shows differences in WPE for different types of voting equipment (p. 40). Precincts with paper ballots, used primarily in rural precincts, showed a median WPE of –0.9, consistent with chance, while all other technologies were associated with unexplained high WPE discrepancies between election and exit poll results:

Table 7: Median WPE by voting equipment

| Type of equipment used at polling place | Median WPE Overall |
|---|---|
| Paper ballot | -0.9 |
| Mechanical voting machine | -10.3 |
| Touch screen | -7.0 |
| Punch cards | -7.3 |
| Optical scan | -5.5 |

There is the possibility that errors for all four automated voting systems could derive from errors in

the election results. Regrettably, Edison/Mitofsky fail to specify P-values, significance levels, or the statistical method by which they arrived at their conclusion that voting machine type is not related to WPE, and their breakdown for voting equipment ignores whether results are tallied in the precinct or at a central location. Further, they do not provide the raw data by which one might evaluate that conclusion. The Edison/Mitofsky report does not report having done an ANOVA of voting machine type that might confirm their claim that there is no difference between precincts using different voting machines.

A limited study of New Mexico's detailed precinct level vote type election results showed that pushbutton digital recording electronic (DRE) voting machines in New Mexico produced significantly higher rates of under-votes in the presidential race in election day voting, than did New Mexico's optical scan voting machines.[17] Similar audits of other states' election results are needed.

*The many anecdotal reports of voting irregularities[18] create a context in which the possibility that the overall vote count was substantially corrupted must be taken seriously. The hypothesis that the discrepancy between the exit polls and election results is due to errors in the official election tally remains a coherent theory.*

## IV. Misleading Use of Adjusted Exit Poll Data

The important distinctions between "weighting" and "adjusting" exit poll data must be made in our analysis.

"**Weighting**" involves comparison of raw exit poll data with known or consistently estimated parameters such as race and gender breakdown of the electorate. The raw data is weighted to better conform to the demographic composition of the electorate, and there is general agreement that such weighting, or "stratification," produces greater accuracy in the exit poll results by diminishing the effects of both sampling error and skewing (e.g., differential response levels by race or gender or age group).

"**Adjusting**", "re-weighting," "renormalization," or "forcing" of exit poll data is also a weighting process but one which involves the use of *tabulated vote counts*, to which the already demographically weighted exit poll results are brought into congruence. Once the polls have closed and tabulated results become available, first at the precinct and then at the county level, Edison/Mitofsky's exit poll results are adjusted to mirror these tabulated results. Thus, it has been stated, "What you would get after the election are preference [i.e., exit poll] numbers forced to the election result."[19] Such adjustment of exit polls results to congruence with incoming tabulated election results did indeed take place late on election night 2004, and was posted to media websites during the hour or so after

[17] http://electionarchive.org/ucvAnalysis/NM/NMAnalysis_EL_JM.pdf
[18] Election Incident Reporting System (EIRS) https://voteprotect.org/index.php?display=EIRMapNation&cat=ALL&search=&go=Apply+filter&tab=ED04 records more than 27,000 incidents, for example.
[19] Email from mitofsky@mindspring.com to verifiedvote2004@aol.com, 10/17/04.

approximately 12:24 a.m. on November 3, 2004. These adjusted results remain posted, as of this writing.[20] The demographically weighted results available prior to this adjustment will be referred to as "unadjusted."

Many have questioned whether this process was in itself sinister, *designed* to conceal troubling questions about vote counting in Election 2004 as revealed by the unadjusted exit poll results. The answer is almost certainly no. And yet the *effect* of the process was at the very least confusing and served to blunt public awareness of the dramatic exit poll-vote count discrepancies during the critical period immediately following the election.

While we acknowledge that *slight* adjustment may legitimately be made to exit polls using the reported election results, so that the results can be used to assess the demographics and opinions underlying the reported voter shares in a consistent fashion, *the justification for doing so rests entirely on the assumption that the reported election results are in fact accurate*, as reflected by a small and undramatic discrepancy between exit poll results and vote counts. In order for the exit poll results in 2004 to be used in this manner they had to be substantially, in fact dramatically, adjusted. Such substantial discrepancies and the need for such dramatic adjustment raised a bright red flag. Edison/Mitofsky ignored this red flag and simply substituted the adjusted data set, which has been generally employed without acknowledgement.

This practice continues in Edison/Mitofsky's report. The National Exit Poll (NEP) data given on pp. 60-61 and again on p. 65 was adjusted to correspond to the official vote count**.** This adjusted data continues to be highly misleading. For example, Adam Nagourney writing in The New York Times[21] apparently unknowingly used this adjusted report data to make the major, and erroneous, point that for the first time the Republican share of the electorate equaled the Democratic (37%-37%). The actual unadjusted exit poll data showed a Democratic share of 38% to Republican 35%. Promulgating multiple and not clearly delineated data sets raises the level of general confusion and detracts from the credibility of the salient data sets and results.

Fortunately a demographically weighted, unadjusted data set has been available for analysis since November 3, 2004. (See Appendix B.) CNN screen shots of exit poll data were downloaded by Jonathan Simon and others from 12:17 to 12:24 AM ET on Nov. 3, 2004.[22] It is an open question whether, in the absence of this somewhat fortuitous data capture, either the vote counts themselves or the exit poll results adjusted to mirror them would have been called into question, and whether any of the unadjusted data sets would have come to light. To the best of our knowledge the Simon screen shots— that are marked as having been updated from 12:17 to 12:24 AM ET and referred to as the "Simon data"[23]—reflect the final demographically weighted exit poll data available before these data

[20] See, e.g., http://www.cnn.com/ELECTION/2004.pages/results/states/CT/P/00/epolls.0.html; this is the page for Connecticut; for other states, substitute the appropriate state abbreviation for "CT" in the url above.
[21] New York Times, January 24, 2005
[22] Copies of these screen shots are posted at: http://www.exitpollz.org/. This unadjusted data remained posted to web sites such as www.CNN.com at that late hour reportedly (and ironically) as a result of a computer problem with a server at Edison.
[23] For a summary of the Simon data see "Exit Poll Prediction" column p. 36-38 of Baiman, Ron affidavit at http://uscountvotes.net/docs_pdf/analysis/OH/Affidavit_04-21_ver2.pdf. It should be noted that Simon was unable to capture unadjusted data for four states (NJ, NY, NC, and VA). For the states of Connecticut, Florida, and Ohio, Simon was captured both unadjusted and adjusted results, all of which show major exit poll adjustments in favor of Bush. In the state on Connecticut, for example, the results changed from 57.7% Kerry/40.9% Bush in the 12:22 a.m. update to 54.7%

were adjusted to conform to the reported election results. Although the E/M report does not acknowledge or explain these CNN screen shots or the data set derived from them, this Simon data corresponds closely with the data sets referred to as "call 3" data and presented by E/M in their report on pp. 21-22[24].

E/M employs this "call-3" data set for the presidential election once in their report (table pp. 21-22) and then abandons it entirely, substituting without acknowledgement, the adjusted data set, and thus perpetuating the confusion and misleading impressions created by their original conversion to the adjusted data on the morning of November 3, 2004. We see no constructive reason for E/M's practice in this regard.

*It is reasonable to ask Edison/Mitofsky to make publicly available the raw precinct level data and weights used to calculate both their " call-3"and "Simon" data sets, and explain to the public its selective avoidance of these data sets in their report.*

Kerry/44.4% Bush in the 12:53 a.m. update, while the number of respondents remained constant at 872. The tabulated results were 54.7% Kerry/44.4% Bush, exactly matching the adjusted poll results.

[24] Although the Simon data and call 3 data do not match exactly, in nearly all cases the discrepancies are very minor (within a few tenths of a percentage point, within the bounds of rounding error) and there is no statistically significant pattern of overstatement or understatement. Either the Simon data or the call-3 data may be used without changing the thrust of our analysis that there exists a pattern of statistically significant discrepancy between the exit poll results and vote counts.

## Summary

There is already a strong case that there were significant irregularities in the presidential vote count from the 2004 election. Nevertheless, critics are asking for firmer proof before going forward with a thorough investigation[25]. We feel strongly that this is the wrong standard. One cannot have proof before an investigation.

In fact, the burden of proof should be to show that the election process is accurate and fair. The integrity of the American electoral system can and should be beyond reproach. Citizens in the world's oldest and greatest democracy should be provided every assurance that the mechanisms they have put in place to count our votes are fair and accurate. The legitimacy of our elected leaders depends upon it.

Well-documented security vulnerabilities and accuracy issues have affected voting equipment as far back as the late 1960s[26], and history shows that partisan election officials have long possessed the power to suppress and otherwise distort the vote counts[27]. The recent and ongoing proliferation of sophisticated computerized vote recording and tallying equipment[28], much of it unverifiable and hence "faith-based", dramatically augments the opportunities for wholesale and outcome-determinative distortions of the vote counting process. That the lion's share of this equipment is developed, provided, and serviced by partisan private corporations only amplifies these serious concerns. The fact that, in the 2004 election, all voting equipment technologies except paper ballots were associated with large unexplained exit poll discrepancies *all favoring the same party* certainly warrants further inquiry.

*The absence of any statistically-plausible explanation for the discrepancy between Edison/Mitofsky's exit poll data and the official presidential vote tally is an unanswered question of vital national importance that demands a thorough and unflinching investigation.*

**US Count Votes is a Utah non-profit corporation. Its goal is to provide nationwide, impartial statistical auditing services to help ensure the accuracy of future elections. US Count Votes is sponsoring the "National Election Data Archive" project in order to collect detailed election data and, prior to November 2006, develop statistical methods to audit elections results data and provide statistical evidence of vote tabulation errors immediately following any US election.**

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[25] See for example http://elections.ssrc.org/research/ExitPollReport031005.pdf

[26] Harris, B. "Black Box Voting: Ballot Tampering in the 21st Century (Talion Publishing, March, 2004): Chapter 2, "Can We Trust These Machines?" http://www.blackboxvoting.org/bbv_chapter-2.pdf contains an extensive list of primary source citations

[27] See for example http://electionarchive.org/ucvAnalysis/OH/FranklinCountyReport_v2.pdf

[28] In November 2004 mechanical vote tallying systems, easily tampered with locally, also continue to be used and show high mean WPEs for precincts using them, according to Edison/Mitofsky's report.

**Appendix A: Voter Response Rate Calculations**

Calculated Kerry and Bush voters response rates required to reconcile Edison/Mitofsky's Partisanship Precinct data as given in Table 1.

We assume that there are no significant differences in precinct size between the various precinct groupings by partisanship. For any assumed percentage of Bush and Kerry voters within any partisanship precinct group, there exist equations where the unknowns are "the response rate for Bush voters" and "the response rate of Kerry voters" that have a single solution.

**For Each Partisan Precinct Grouping we let:**

K = Kerry voter response rate that we want to solve for (out of the sample)
B = Bush voter response rate that we want to solve for (out of the sample)
k = % of Kerry voters in the precinct grouping that we assume for the calculation
b = % of Bush voters in the precinct grouping that we assume for the calculation
R = overall response rate given by E/M within each precinct grouping
n = the number of voters in each precinct grouping
E = the mean WPE error given by E/M for that precinct grouping
m = the miss rate given by E/M

**Calculation of Bush and Kerry response rates as a proportion of the *sample***:

kn = number of Kerry voters in the precinct grouping

bn = number of Bush voters in the precinct grouping

knK = number of Kerry voters in the sample who responded to exit polls

bnB = number of Bush voters in the sample who responded to the exit polls

Rn = Total number of voters who completed the exit poll in the precinct grouping

(number of Kerry voters) / (total number of voters) = ratio of Kerry voters who responded to polls

k - .5E = ratio of Kerry voters who responded to exit polls according to the WPE discrepancy

b + .5E = ratio of Bush voters who responded to exit polls according to the WPE discrepancy

Note also that $k + b = 100\%$ and $kK + bB = R$

So, putting it altogether -

$$(nkK) / (Rn) = k - .5E \quad \text{and} \quad (nbB) / (Rn) = b + .5E$$

Solving for K and B we obtain:

$$K = (k - .5E)(R/k) \quad \text{and} \quad B = (b + .5E)(R/b)$$

**Calculation of Bush and Kerry response rates as a proportion of *voters asked***:

K = Kerry voter response rate that we want to solve for (out of those asked)
B = Bush voter response rate that we want to solve for (out of those asked)
knK(1-m) = number of Kerry voters who were asked and who responded to exit polls
bnB(1-m) = number of Bush voters who were asked and who responded to the exit polls

So, putting it altogether -

$$nkK(1-m) / (Rn) = k - .5E \quad \text{and} \quad nbB(1-m) / (Rn) = b + .5E$$

Solving for K and B we obtain:

$$K = (k - .5E)(R/k(1-m)) \quad \text{and} \quad B = (b + .5E)(R/b(1-m))$$

On the next page are three tables of calculated required response rates for Bush and Kerry voters under different assumed proportions of Bush and Kerry voters in each partisanship precinct group. One can see that any assumption leads to implausible response rates.

Table 2: Assume Midpoints - Bush/Kerry ratios of 10:90, 30:70, 50:50, 70:30, 90:10

| Table 2: Calculated Required Bush & Kerry Response Rates using midpoints of precinct intervals as the assumed Bush/Kerry voter percentages in partisan precincts. | | | | Assumed % of Kerry/Bush voters in partisan precincts | | Required Response Rates for entire sample | | Required Response Rates of voters who were asked to take the exit poll | |
|---|---|---|---|---|---|---|---|---|---|
| **Partisanship of Precinct based on Election Results** | | **mean WPE** | **Response Rate** | **Bush** | **Kerry** | **Bush** | **Kerry** | **Bush** | **Kerry** |
| 0< Bush <=20% | 80< Kerry <=100% | 0.3% | 53% | 10% | 90% | 53.8% | 52.9% | 61.1% | 60.1% |
| 20< Bush <=40% | 60< Kerry <=80% | -5.9% | 55% | 30% | 70% | 49.6% | 57.3% | 56.4% | 65.1% |
| 40< Bush <=60% | 40< Kerry <=60% | -8.5% | 52% | 50% | 50% | 47.6% | 56.4% | 53.5% | 63.4% |
| 60< Bush <=80% | 20< Kerry <=40% | -6.1% | 55% | 70% | 30% | 52.6% | 60.6% | 58.4% | 67.3% |
| 80< Bush <=100% | 0< Kerry <=20% | -10.0% | 56% | 90% | 10% | 52.9% | 84.0% | 59.4% | 94.4% |

Table 3: Assume Normal Curve - Bush Kerry ratios of 13:87, 33:67, 50:50, 67:33, 87:13

| Table 3: Calculated Required Bush & Kerry Response Rates using the normal curve to locate likely values to assume for Bush/Kerry voter percentages in partisan precincts. | | | | Assumed % of Kerry/Bush voters in partisan precincts | | Required Response Rates for entire sample | | Required Response Rates of voters who were asked to take the exit poll | |
|---|---|---|---|---|---|---|---|---|---|
| Partisanship of Precinct by Election Results | | mean WPE E | Response Rate R | Bush b | Kerry k | Bush B | Kerry K | Bush B | Kerry K |
| 0< Bush <=20% | 80< Kerry <=100% | 0.3% | 53% | 13% | 87% | 53.61% | 52.91% | 60.9% | 60.1% |
| 20< Bush <=40% | 60< Kerry <=80% | -5.9% | 55% | 33% | 67% | 50.08% | 57.42% | 56.9% | 65.3% |
| 40< Bush <=60% | 40< Kerry <=60% | -8.5% | 52% | 50% | 50% | 47.58% | 56.42% | 53.5% | 63.4% |
| 60< Bush <=80% | 20< Kerry <=40% | -6.1% | 55% | 67% | 33% | 52.50% | 60.08% | 58.3% | 66.8% |
| 80< Bush <=100% | 0< Kerry <=20% | -10.0% | 56% | 87% | 13% | 52.78% | 77.54% | 59.3% | 87.1% |

Table 4: Assume Arbitrary Minimizing - Bush/Kerry ratios of 1:99, 21:79, 41:59, 61:39, 81:19

| Table 4: Calculated Required Bush & Kerry Response Rates using arbitrary assumed values of Bush/Kerry voter percentages in partisan precincts that minimize Bush/Kerry response rate differences. | | | | Assumed % of Kerry/Bush voters in partisan precincts | | Required Response Rates for entire sample | | Required Response Rates of voters who were asked to take the exit poll | |
|---|---|---|---|---|---|---|---|---|---|
| Partisanship of Precinct based on Election Results | | mean WPE E | Response Rate R | Bush b | Kerry k | Bush B | Kerry K | Bush B | Kerry K |
| 0< Bush <=20% | 80< Kerry <=100% | 0.3% | 53% | 1% | 99% | 60.95% | 52.92% | 69.3% | 60.1% |
| 20< Bush <=40% | 60< Kerry <=80% | -5.9% | 55% | 21% | 79% | 47.27% | 57.05% | 53.7% | 64.8% |
| 40< Bush <=60% | 40< Kerry <=60% | -8.5% | 52% | 41% | 59% | 46.61% | 55.75% | 52.4% | 62.6% |
| 60< Bush <=80% | 20< Kerry <=40% | -6.1% | 55% | 61% | 39% | 52.25% | 59.30% | 58.1% | 65.9% |
| 80< Bush <=100% | 0< Kerry <=20% | -10.0% | 56% | 81% | 19% | 52.54% | 70.74% | 59.0% | 79.5% |

**Appendix B:**

**WPE and Differential Partisan Response**

WPE is a poor measure of "differential response by party" as its magnitude is affected by the partisan composition of the precinct (k or b) and by the overall response rate (R), in addition to the relative response to exit pollsters by members of each party.[29] This can be seen by inspecting Tables 2-4 above. The difference between Bush and Kerry voter response rates and mean WPE, increases as precincts become more partisan. This is because, in addition to differential response by party, overall response rates and partisan composition affect WPE

This can be seen by setting K = r - .5w and B = r +.5w, where w is "differential response by party" and r is "mean response by party", and substituting these into the solutions for K and B in Appendix A, to get the following two equation system for r and w:
(k - .5E)(R/k) = r - .5w
(b +.5E)(R/b) = r + .5w

The solution of this system for w is:

w = (R/b)(b + E/2) + (R/k)(E/2 - k)

so that when b + k = 1, as we assume in this report (neglecting the response of "independent voters" who made up 1% or so of the national electorate) we get:

w = (RE/2)(1/b(1 - b)) = (RE/2)(1/k(1 - k)) or conversely:

E = (2w/R)b(1-b) = (2w/R)k(1-k)

From this equation we see that E, or WPE, is not only determined by the "partisan response differential", w, but also by k or b, and R. More competitive precincts, and precincts with lower overall response rates, will have higher absolute WPE simply because of the mathematical effects of b, or k, and R, on the relationship between w and E.

"Differential response by party", w, will *not* be equal to E unless
(2/R)k(1-k) = (2/R)b(1-b) = 1. For a perfectly competitive precinct (b = k = .5) E = (.5/R)w, its maximum value. If in addition R = .5 then E = w.

This suggests that the WPE's listed in Tables 2-4 of our report substantially understate differential response by party, especially for partisan districts. As we have shown, w has to be very, and implausibly, large in all cases, if E is to be explained.

Moreover, this analysis suggests that if there is a pervasive and more or less constant bias in exit polling because of a differential response by party, WPE should be greatest for more balanced precincts and fall as precincts become more partisan. The data presented on p. 36, 37 of the E/M report and displayed in Table 1 of our report above, show that this is the case *for all except the most highly partisan Bush precincts for which WPE dramatically increases to -10.0%. Our calculations above show the differential partisan response necessary to generate this level of WPE in these precincts*

[29] We thank Elizabeth Liddle, of the University of Nottingham, U.K., for calling our attention to the effect of precinct partisanship on the relationship between differential partisan response and WPE. We take full responsibility for the derivations and conclusions that we have arrived at from analyzing this pattern in this Appendix.

*ranges from 40% (Table 2) to an absolute minimum of 20.5% (Table 4).* These results would appear to lend further support to the "Bush Strongholds have More Vote-Corruption" (Bsvcc) hypothesis discussed in Section B of our report, and to the discussion of the "Very Implausible Patterns of Exit Poll Participation Are Required to Satisfy E/M's data in 80-100% Bush Precincts.

**Signed WPE versus Absolute WPE in partisan precincts**

It should also be noted that the next to last column of the precinct partisanship table (p. 36 of E/M report) shows that the mean absolute value WPE (unsigned WPE) for highly partisan Bush precincts *declines* to 12.4 % for highly partisan Republican precincts relative to less partisan (13.2% and 13.4%) and more balanced precincts (15.2%). Only highly partisan Kerry precincts have a lower mean absolute value WPE of 8.8%.

Comparing this data to the mean WPE data in Table 2 of our report shows that:

a) Highly Kerry precincts had large absolute value WPE's (totaling 8.8%) but these included both pro-Kerry and pro-Bush discrepancies that off-set each other so that the average (signed) WPE was only 0.3%. Pro-Bush bias was just about offset by pro-Kerry bias in these precincts, as one would expect for random sampling bias and random measurement error.

b) A somewhat similar, but less balanced, pattern occurred in less partisan precincts as in these precincts (signed) WPE, though consistently negative, was roughly half the magnitude of mean absolute value WPE (-5.5 and 13.4, -8.3 and 15.2, -6.1 and 13.2, respectively). This suggests that in these precincts about half of pro-Kerry exit poll bias was off-set by pro-Bush exit poll bias. This is not what one would expect from random exit poll bias and measurement error but at least moves in the expected direction.

c) The dramatic and unexpected increase in (signed) mean WPE in highly Bush precincts of -10.0%, noted above, is also unexpectedly close to mean absolute value WPE (12.4%) in these precincts. *This suggests that the jump in (signed) WPE in highly partisan Bush precincts occurred primarily because (signed) WPE discrepancies in these precincts were, unlike in a) above and much more so than in b) above, overwhelmingly one-sided negative overstatements of Kerry's vote share.*

These results lend further support to the "Bush Strongholds have more Vote-Corruption" (Bsvcc) hypothesis discussed in Section B of our report, and to the discussion of the "Very Implausible Patterns of Exit Poll Participation Are Required to Satisfy E/M's data in 80-100% Bush Precincts".

*It is reasonable to ask Edison/Mitofsky to explain why signed WPE in highly partisan precincts is not lower than in less partisan precincts as would be mathematically expected, and where this dramatic increase in one-sided WPE in highly Bush precincts and significant increases in one-sided WPE in more partisan precincts, both of which are at odds with the more or less random pattern of signed WPE error in highly Kerry precincts, comes from.*

## Appendix C: Jonathan Simon Exit Poll Data - Downloaded from CNN and similar to the "Call-3" data in Edison/Mitofsky's Report on pp. 21-22

| BREAKDOWN OF EXIT POLLING AND VOTE TABULATION - PRESIDENTIAL ELECTION 2004 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **State Venue** | **# Respondents** | **UpdateTime (ET)** | **Bush Exit Poll%** | **Kerry Exit Poll%** | **Bush Election%** | **Kerry Election%** | **Red Shift%*** | **Type Of State** |
| **National Vote** | **13047** | **12:23 AM** | **48.2** | **50.8** | **50.9** | **48.1** | **2.7** | **N/A** |
| **Alabama** | 730 | 12:17 AM | 58.1 | 40.5 | 63 | 37 | 4.2 | Safe |
| **Alaska** | 910 | 1:00 AM | 57.8 | 38.8 | 62 | 35 | 4 | Safe |
| **Arizona** | 1859 | 12:19 AM | 52.8 | 46.7 | 55 | 44 | 2.5 | Safe |
| **Arkansas** | 1402 | 12:22 AM | 52.9 | 46.1 | 54 | 45 | 1.1 | Safe |
| **California** | 1919 | 12:23 AM | 43.4 | 54.6 | 45 | 54 | 1.1 | Safe |
| **Colorado** | 2515 | 12:24 AM | 49.9 | 48.1 | 52 | 47 | 1.6 | Battleground |
| **Connecticut(1)** | 872 | 12:22 AM | 40.9 | 57.7 | 44 | 54 | 3.4 | Safe |
| **Connecticut(2)** | 872 | 12:53 AM | 44.4 | 54.7 | 44 | 54 | 0.2 | Safe |
| **DistColumbia** | 795 | 12:22 AM | 8.2 | 89.8 | 9 | 90 | 0.3 | Safe |
| **Delaware** | 770 | 12:22 AM | 40.7 | 57.3 | 46 | 53 | 4.8 | Safe |
| **Florida(1)** | 2846 | 8:40 PM | 49.8 | 49.7 | 52 | 47 | 2.5 | Critical(Early) |
| **Florida(2)** | 2846 | 12:21 AM | 49.8 | 49.7 | 52 | 47 | 2.5 | Critical |
| **Florida(3)** | 2862 | 1:01 AM | 51.4 | 47.6 | 52 | 47 | 0.6 | Critical(Late) |
| **Georgia** | 1536 | 12:22 AM | 56.6 | 42.9 | 58 | 41 | 1.7 | Safe/Suspect |
| **Hawaii** | 499 | 12:22 AM | 46.7 | 53.3 | 45 | 54 | -1.2 | Safe |
| **Idaho** | 559 | 12:22 AM | 65.7 | 32.9 | 68 | 30 | 2.6 | Safe |
| **Illinois** | 1392 | 12:23 AM | 42.4 | 56.6 | 45 | 55 | 2.1 | Safe |
| **Indiana** | 926 | 12:22 AM | 58.4 | 40.6 | 60 | 39 | 1.6 | Safe |
| **Iowa** | 2502 | 12:23 AM | 48.4 | 49.7 | 50 | 49 | 2 | Battleground |
| **Kansas** | 654 | 12:22 AM | 64.5 | 34.1 | 62 | 37 | -2.7 | Safe |
| **Kentucky** | 1034 | 12:22 AM | 58.4 | 40.2 | 60 | 40 | 0.9 | Safe |
| **Louisiana** | 1669 | 12:21 AM | 54.7 | 43.9 | 57 | 42 | 2.1 | Safe |
| **Maine** | 1968 | 12:22 AM | 44.3 | 53.8 | 45 | 54 | 0.3 | Safe |
| **Maryland** | 1000 | 12:22 AM | 42.3 | 56.2 | 43 | 56 | 0.5 | Safe |
| **Massachusetts** | 889 | 12:22 AM | 32.9 | 65.2 | 37 | 62 | 3.7 | Safe |
| **Michigan** | 2452 | 12:21 AM | 46.5 | 51.5 | 48 | 51 | 1 | Battleground |
| **Minnesota** | 2178 | 12:23 AM | 44.5 | 53.5 | 48 | 51 | 3 | Battleground |
| **Mississippi** | 798 | 12:22 AM | 56.5 | 43 | 60 | 40 | 3.3 | Safe |
| **Missouri** | 2158 | 12:21 AM | 52 | 47 | 54 | 46 | 1.5 | Battleground |
| **Montana** | 640 | 12:22 AM | 58 | 37.5 | 59 | 39 | -0.3 | Safe |
| **Nebraska** | 785 | 12:22 AM | 62.5 | 36 | 66 | 33 | 3.3 | Safe/Suspect |
| **Nevada** | 2116 | 12:23 AM | 47.9 | 49.2 | 51 | 48 | 2.2 | Battleground |
| **New Hampshire** | 1849 | 12:24 AM | 44.1 | 54.9 | 49 | 50 | 4.9 | Battleground |
| **New Jersey** | 1520 | 12:50 AM | 46.2 | 52.8 | 46 | 53 | -0.2 | Safe(Late) |
| **New Mexico** | 1951 | 12:24 AM | 47.5 | 50.1 | 50 | 49 | 1.8 | Battleground |
| **New York** | 1452 | 12:52 AM | 40.9 | 58.2 | 40 | 58 | -0.4 | Safe(Late) |
| **North Carolina** | 2167 | 12:48 AM | 56.5 | 42.7 | 56 | 44 | -0.9 | Safe(Late) |

| State Venue | # Respondents | UpdateTime (ET) | Bush Exit Poll% | Kerry Exit Poll% | Bush Election% | Kerry Election% | Red Shift%* | Type Of State |
|---|---|---|---|---|---|---|---|---|
| **North Dakota** | 649 | 12:22 AM | 64.4 | 32.6 | 63 | 36 | -2.4 | Safe |
| **Ohio(1)** | 1963 | 7:32 PM | 47.9 | 52.1 | 51 | 49 | 3.1 | Critical |
| **Ohio(2)** | 2020 | 1:41 AM | 50.9 | 48.6 | 51 | 49 | 0.3 | Critical(Late) |
| **Oklahoma** | 1539 | 12:23 AM | 65 | 34.6 | 66 | 34 | 0.8 | Safe |
| **Oregon** | 1064 | 12:22 AM | 47.9 | 50.3 | 48 | 52 | -0.8 | Safe |
| **Pennsylvania** | 1930 | 12:21 AM | 45.4 | 54.1 | 49 | 51 | 3.4 | Critical |
| **Rhode Island** | 809 | 12:22 AM | 34.9 | 62.7 | 39 | 60 | 3.4 | Safe |
| **South Carolina** | 1735 | 12:24 AM | 53.4 | 45.1 | 58 | 41 | 4.4 | Safe |
| **South Dakota** | 1495 | 12:24 AM | 61 | 36.5 | 60 | 39 | -1.8 | Safe |
| **Tennessee** | 1774 | 12:23 AM | 58 | 40.6 | 57 | 43 | -1.7 | Safe |
| **Texas** | 1671 | 12:22 AM | 62.2 | 36.3 | 61 | 38 | -2 | Safe |
| **Utah** | 796 | 12:22 AM | 68.1 | 29.1 | 71 | 27 | 2.5 | Safe |
| **Vermont** | 685 | 12:22 AM | 33.3 | 63.7 | 39 | 59 | 5.2 | Safe |
| **Virginia** | 1431 | 12:56 AM | 54.1 | 45.4 | 54 | 45 | 0.2 | Safe(Late) |
| **Washington** | 2123 | 12:38 AM | 44 | 54.1 | 46 | 53 | 1.6 | Safe(Late) |
| **West Virginia** | 1722 | 12:24 AM | 54 | 44.5 | 56 | 43 | 1.8 | Safe |
| **Wisconsin** | 2223 | 12:21 AM | 48.8 | 49.2 | 49 | 50 | -0.3 | Battleground |
| **Wyoming** | 684 | 12:22 AM | 65.5 | 30.9 | 69 | 29 | 2.7 | Safe |

*

**Red Shift = [(Btab% - Bep%) + (Kep% - Ktab%)]/2 tab= tabulated vote, ep=exit poll**

**Positive - net movement toward Bush, Negative (blue shift) - net movement toward Kerry**

Using Florida (critical) as an example:

Exit Poll % : B=49.8% K=49.7%

Tab (99% precincts) B=52% K=47%

Red Shift: [(52% - 49.8%) + (49.7% - 47%)]/2 = (2.2% + 2.7%)/2 = +2.5%

**Appendix D:**
**Calculation of National Exit Sample Odds**

E/M states that there should be a 95% probability that the reported election result will be within 1% of the exit-poll share for exit polls with sample sizes of 8,001 to 15,000. E/M also states that its national exit poll had a sample size of 12,219.[30]

This information allows us to determine the implied standard deviation for this sample and find what the probability is that the national exit poll would overestimate Kerry's vote share by 2.7%. The odds of this occurring by chance are one in 16,496,696 - see table below:

| National Exit Poll Results | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I |
| | Reported Election | | Exit Poll Results | | | | | |
| | Bush | Kerry | Bush | Kerry | Mitofsky Standard Deviation | Exit Poll Overestimate of Kerry Vote | Mitofsky Margin of Error with 95% Probability | Mitosfsky 5% Confidence Interval Z-Score Probability of Random Occurance |
| | | | | | H/1.96 | E-C | 1% | 1-NORM(E,C,F,True) |
| United States | 50.90% | 48.10% | 48.20% | 50.80% | 0.005102 | 2.70% | 1.00% | 0.000000060493 |
| | | | | | | | Odds (1/I6) | 16,530,850 |

[30] Methods Statement - National Election Pool Exit Polls by Edison and Mitofsky International, November 2, 2004
See: http://www.exit-poll.net/election-night/MethodsStatementNationalFinal.pdf