



# American Statistical Association

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## Statistical Issues in Elections

Between races for the U.S. House of Representatives, Senate and governorships there will be over 500 major elections this fall, and thousands more local and state races. On November 8<sup>th</sup>, many Americans will wake up not knowing whether a candidate they voted for won. Projecting from past experience, we can expect between five to twenty federal elections and dozens of local elections to be within plus or minus 2% – too close to call given current technology. Procedures for resolving the uncertainty should be thought about now, before partisans start arguing for methods that seem likely to benefit them. Statisticians can help develop credible procedures.

Trustworthy elections require transparent processes with limited opportunity for error or abuse. Elections entail many steps, from determining voting eligibility, to casting, recording, tallying and reporting the vote. To improve the quality of complex processes, America has often called on statisticians such as Walter Shewhart in the 1920s or W. Edwards Deming in the 1970s and 1980s.

The starting point to thinking statistically is to identify all the steps, especially those most susceptible to problems. As we complete our third Federal election cycle since the difficulties of the 2000 elections, we know there are some big problems. For example, a team funded by the National Science Foundation tested the 5 commercially-dominant voting systems and a University of Maryland prototype, asking each of 1,540 participants to “vote” for an assigned candidate. No system got better than 98.5% correct votes, leaving a 1.5% margin of error!

In this brief letter, I address only the accuracy of the votes to be cast next month, although for the future, improvements to other parts of the process may matter more. Here are two things, neither easy, but largely doable, and important, to work on for this November:

- Only real recounts (cross-checking paper records against official tabulations), not just rereading machine totals, will resolve close elections.
- Conducting random audits in all localities will help maintain honesty, enable a factual description of this election’s accuracy, and provide the data needed for doing better in 2008.

For more information related to improving the process of an election please contact former ASA President Dr. Fritz Scheuren at 202-320-3446 or our ASA Science and Public Affairs Advisory Committee Chair Dr. David Marker at 301-251-4398.

Sincerely,

Sallie Keller-McNulty, PhD.  
President, American Statistical Association