Executive Summary

Residual Votes Attributable to Technology
An Assessment of the Reliability of Existing Voting Equipment

The Caltech/MIT Voting Technology Project
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This report examines the use of voting equipment and the incidence of spoiled and unmarked ballots associated with that equipment. We call the rate of spoiled and unmarked ballots the residual vote rate. The residual vote rate is not a pure measure of voter error. If voting technologies are not producing voter mistakes or confusion, the residual vote rate should be unrelated to equipment. The study covers election results from over 2700 counties and municipalities in the 1988, 1992, 1996, and 2000 presidential elections.

- The United States uses five general types of election technologies: hand-counted paper ballots, lever machines, punch cards, optically scanned paper ballots, and electronic machines (called direct recording electronics).   There are variations within each of these types of technology; this investigation focuses on the performance of the five broad types of voting technology.

- Over the last two decades, election administrators have increasingly abandoned lever machines and hand-counted paper ballots in favor of electronic machines and optically scanned paper ballots.

- Approximately 2 percent of all presidential ballots are spoiled or unmarked (residual votes).

- The incidence of residual votes is highest for voters in counties using punch cards and electronic machines and is lowest for voters in counties using lever machines, optically scanned paper ballots, and hand-counted paper ballots.

- The same pattern holds once we statistically control for all features of individual counties (including county literacy rates and income), the year of the election, total turnout, shifts in technology, and other candidates on the ballot.

- Optically scanned ballots are a viable alternative to older technologies. We see room for improvement with electronic machines, especially the newer touch screen technologies.

- We find the performance of punch cards alarming: punch cards are an established technology and the residual vote rate of this technology is nearly double that of alternatives.