Better Ballots

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by Lawrence Norden, David Kimball,
Whitney Quesenbery, and Margaret Chen

Brennan Center for Justice

The Brennan Center for Justice at New York University School of Law is a non-partisan public policy and law institute that focuses on fundamental issues of democracy and justice. Our work ranges from voting rights to redistricting reform, from access to the courts to presidential power in the fight against terrorism. A singular institution — part think tank, part public interest law firm, part advocacy group — the Brennan Center combines scholarship, legislative and legal advocacy, and communication to win meaningful, measurable change in the public sector.

Brennan Center's Voting Rights and Elections Project

The Brennan Center promotes policies that protect rights, equal electoral access, and increased political participation on the national, state and local levels. The Voting Rights and Elections Project works to expand the franchise, to make it as simple as possible for every eligible American to vote, and to ensure that every vote cast is accurately recorded and counted. The Center's staff provides top-flight legal and policy assistance on a broad range of election administration issues, including voter registration systems, voting technology, voter identification, statewide voter registration list maintenance, and provisional ballots.

The Help America Vote Act of 2002 required states to replace antiquated voting machines with new electronic voting systems, but jurisdictions had little guidance on how to evaluate new voting technology. The Center convened four panels of experts, who conducted the first comprehensive analyses of electronic voting systems. The research advanced over a period of nearly two years and culminated in two path-breaking reports: *The Machinery of Democracy: Protecting Elections in an Electronic World,* which focused on voting system security, and *The Machinery of Democracy: Voting System Security, Accessibility, Usability, and Cost.* Since the Brennan Center published these two reports, the Center has helped election officials and jurisdictions ensure that their electronic voting systems are as secure and reliable as possible.

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Brennan Center Task Force on Ballot Design

The Brennan Center convened a task force of several of the nation's leading usability experts, designers, voting system experts, political scientists, and election officials to assist the authors of this report review ballots and election laws. Members of the task force were consulted as the authors made conclusions and policy recommendations related to best ballot design practices. The conclusions and recommendations in this report are those of the authors alone and should not necessarily be ascribed to task force members. The members of the task force are listed below; organizational affiliations are provided for identification purposes only.

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Introduction

Key Points

- Poor ballot design frustrates voters, undermines confidence in the electoral process, and contributes to related Election Day problems.
- Tens or hundreds of thousands of votes are lost or miscast in every election year as a result of poorly designed ballots.
- All voters are at some risk for lost or misrecorded votes.
- The risk is greater for particular groups of citizens, including older voters, new voters, and low-income voters.
- All voting technologies are affected.
- The recommendations in this report are timely: many can be implemented, relatively easily — before the November election.

An election is not held to test voters' ability to follow instructions, but to receive instructions from the voters as to which candidates they will elect. No legitimate public purpose is served by designs that distort those instructions.

The notorious butterfly ballot that Palm Beach County, Florida election officials used in the 2000 election is probably the most infamous of all election design snafus. It was one of many political, legal, and election administration missteps that plunged a presidential election into turmoil and set off a series of events that led to, among other things, a vast overhaul of the country's election administration, including the greatest change in voting technology in United States history.

Yet, ironically, eight years after the 2000 election, and billions of dollars spent on new voting technology, the problems caused by poor ballot design have not been fully and effectively addressed on a national level. Year in and year out, we see the same mistakes in ballot design, with the same results: tens, and sometimes hundreds, of thousands of voters disenfranchised by confusing ballot design and instructions, sometimes raising serious questions about whether the intended choice of the voters was certified as the winner.

Problems with voting technology have, rightly, attracted much public attention. Scores of independent reports — including a major study published by the Brennan Center — have documented the vulnerabilities of electronic voting machines.[1] More importantly, voting system failures lead to long lines on Election Day, voters being turned away at the polls, and lost votes.[2] These are serious problems, and we must do what we can to ensure that poor technology and procedures do not continue to disenfranchise voters.

At the same time, when it comes to ensuring that votes are accurately recorded and tallied, there is a respectable argument that poor ballot design and confusing instructions have resulted in far more lost votes than software glitches, programming errors, or machine breakdowns. As this report demonstrates, poor ballot design and instructions have caused the *loss of tens and sometimes hundreds of thousands of votes in nearly every election year.*

While all groups of voters are affected by poorly designed ballots and badly drafted instructions, these problems disproportionately affect low-income voters, new voters, and elderly voters. All too often, the loss of votes and rate of errors resulting from these mistakes are greater than the margin of victory between the two leading candidates. As the examples in this report show, problems caused by poor ballot design and instructions recur in American elections, regardless of the type of voting technology a jurisdiction has used.

Some have dismissed the degree to which poor ballot design undermines democracy by arguing that voters only have themselves to blame if they fail to properly navigate design flaws.[3] This is unfair. Candidates should win or lose elections based upon whether or not

they are preferred by a majority of voters, not on whether they have the largest number of supporters who — as a result of education and experience — have greater facility navigating unnecessarily complicated interfaces or complex instructions, or because fewer of their supporters are elderly or have reading disabilities. Nor should candidates win elections because ballot designs happened to make it more difficult for voters supporting their opponents to accurately cast their votes.[4]

Many voters will be presented with a new voting system for the first time in 2008. For these voters in particular, usable ballot designs and instructions will be important. For further information about these voters, see the Appendix of this report.

Registered Voters Living in Counties with New Voting Systems[5]	15,194,476
Number of Voting-Age Persons Moving Annually[6]	29,141,000
Approximate Number of Newly Registered Voters in First Three Months of 2008[7]	3,500,000

Fortunately, avoiding the design blunders that have cost so many votes in the past need not be particularly complicated, time consuming, or expensive. In recent months, there have been several efforts to reexamine how voting technology can be made more usable, to ensure that voters' choices are accurately recorded.

- In June 2007, the U.S. Election Assistance Commission (the "EAC") published *Effective Designs for the Administration of Federal Elections*, several hundred pages of guidelines intended to assist election officials in designing more usable election materials. The EAC report was prepared by Design for Democracy, an initiative of AIGA, which also published a book on effective ballot design.[8]

- In October 2007, Professors David Kimball and Martha Kropf, two of the nation's leading academics in the area of ballot usability, published *Dos and Don'ts of Ballot Design* for the AEI/Brookings Election Reform Project.[9] In that report, they listed twelve ballot features to avoid and provided historical examples of how these features have previously led to thousands of "residual" votes.

- In 2008, the Brookings Institution published a book by several academics called Voting Technology: The Not-So-Simple Act of Casting a Ballot, which sought to use empirical research to quantify voters' reactions to different voting systems, including their ability to use these technologies to accurately cast their intended choices.[10]

- A new draft of the *EAC's Voluntary Voting Systems Guidelines* ("VVSG") (currently being reviewed) will establish new federal standards for voting systems of all kinds. It includes some requirements for good design, but unfortunately does not require vendors to fully support the ballot design recommendations made in *Effective Designs for the Administration of Federal Elections.*[11]

Election officials evince a growing interest in better ballot design. Design for Democracy has worked on election materials in Illinois, Nebraska and Oregon, and election officials report that their conferences increasingly focus on ballot design and usability.[12]

We encourage election officials, policy makers, and concerned members of the public to review these documents and continue to work with experts to help ensure better ballot design in their communities. This report is intended to complement those documents and efforts by providing an easy-to-use guide that will allow state and local election officials to avoid the kinds of design mistakes we have seen in every election year in the last decade, while maximizing the likelihood that voters' intended choices are accurately recorded.

In a few months, our nation will hold what many believe is our most important election in a generation. Millions of Americans will cast their votes for the first time. While there is much that can and should be done prior to the general election to ensure that voting is as secure as possible, it is neither likely nor desirable for many jurisdictions to make major changes to their voting equipment or Election Day procedures in the remaining months before November.

However, in the next few months, every state and county can take simple steps to avoid poorly designed ballots and help prevent another Palm Beach County 2000, Cuyahoga County 2004, Sarasota County 2006, Los Angeles County 2008, or any of the many other ballot design problems detailed in this report, which have disenfranchised hundreds of thousands of voters, and — all too frequently — left citizens wondering whether various elections provided an accurate measure of voters' intentions.

Findings

Our review of ballot design and instructions, and state practices and requirements related to ballot design, lead to three key conclusions:

- **Poor ballot design and instructions have led to the disenfranchisement of hundreds of thousands of voters in the last several federal elections.** In nearly every election, we have seen ballot design mistakes repeated. There is compelling evidence that when basic usability principles are ignored in the design of ballots and drafting of instructions, a significant percentage of voters will be disenfranchised, and the affected voters will disproportionately be poor, minority, elderly and disabled voters.

- **A lack of clear and consistent ballot design guidance from federal and state governments contributes to differing residual and miscast vote rates from county to county, state to state.** Frequently, counties within the same state have created different ballot designs for the same federal and statewide races. All too often, poor ballot design in one county has contributed to dramatically higher rates of lost or miscast votes than in other counties with better ballot designs. Similarly, poor ballot designs or instructions in one state may lead to higher residual vote rates in that state than in other states with similar populations.

- **Usability testing is the best way to make sure that voters can use the ballot successfully, confident that they actually voted for the candidates and positions they intended to vote for.** Usability testing allows election officials to observe individual voters using a ballot — before the election — in order to see where they have problems. This allows election officials to analyze the design and language choices to determine the cause of those problems. They can then redesign and rewrite the ballot to eliminate those problems — before the election. Unfortunately, the vast majority of jurisdictions do not conduct usability testing of their ballots before an election. Of course, all ballots will eventually receive a usability test — on Election Day. At that point, unfortunately, finding out that a ballot is confusing to voters is most unwelcome news. Our hope is that by testing ballots before Election Day, election officials will make adjustments to ballots and avoid the kinds of design problems that result in lost or miscast votes. In our examination of the laws of all fifty states, we did not find any requirement for usability testing.

  There are a number of steps that the federal government, states, and counties can take to improve their ballot design and instructions and avoid debacles of the sort we have seen in the last several elections. We've focused on steps that can be taken at the state and county level in time to affect the November 2008 election.

At the state and county level, we recommend the following actions:

- **Develop a checklist of design best practices for ballot designers.** A good place to start is with the generic checklist provided in this report at page 16 , to avoid the kinds of design mistakes we have seen made repeatedly in the last several years (illustrations of these mistakes can be found in *Ballot Design Problems* of this report). This checklist can be adjusted to meet local laws and equipment capabilities. When possible, election officials should seek help from professional information designers, simple language writers, and usability experts to apply guidelines and checklists to the design of ballots and related instructions.

- **Conduct usability testing of ballots *before* finalizing the design and instructions.** Usability testing of ballots is the best way to ensure that a particular design does not lead to unnecessary voter errors. In the past, election officials may have believed that demands on their time and budgets made usability testing of ballots an unrealistic option. Today, as discussed in *Policy Recommendations* of this report, it is possible to conduct valuable usability studies of ballots in a matter of hours, without having to hire experts, with the definite effect of reducing the likelihood of voter errors.

- **Actively publicize sample ballots that look like the ballots voters will use at their polling places.** Publicize ballots ahead of an election, by sending them to local party leaders, business leaders, non-profit organizations, civil rights groups, universities, etc. Ideally, these sample ballots will also be posted on the web and sent to all registered voters.[13] If sample ballots show the same layout and design as the actual ballots used at the polling place, early publicity will provide voters with an opportunity to become familiar with the ballot, thereby decreasing the likelihood that they will make errors on Election Day. Furthermore, by providing sample ballots to a wide range of groups ahead of time, election officials increase the likelihood that they will be warned of ballot design flaws before Election Day, thereby giving them an opportunity to change their ballots and/or educate voters about potential problems when they arrive at polling places to vote. Unfortunately, all too frequently, sample ballots sent to voters do not look like the ballots used on Election Day.[14]

- **If usability testing *or* the publication of sample ballots identifies problems with ballot design, make necessary changes.** In our historical review of poor ballot designs that led to high numbers of lost or miscast votes, we found that merely recognizing that a ballot design was flawed was not enough to prevent big problems on Election Day. While it is preferable to warn voters of design flaws than to ignore them, in the best case scenario, counties will conduct usability tests and publish sample ballots early enough so that if problems are discovered, the flawed ballot design and/or instructions can be changed.

At the state level, the following actions could lead to better ballots for voters:

- **Create ballot design guidelines and templates for each brand and model of voting system.** Since 2000, the Florida Secretary of State has developed detailed ballot design regulations for each brand and model of voting system used in the state.[15] These regulations include images of sample ballots that can be used as templates by the counties.[16] We encourage other states to adopt this practice. State offices can also create samples or templates that can be adapted by the counties. For example, the Oregon Secretary of State's office employs a designer who works on all election materials, including all materials voters use.[17]

- **Review county ballot designs.** The Secretary of State or other chief election official can select a full-time employee or outside expert to review county ballots. This will allow overburdened counties to get a "second set of eyes" to review ballot designs. It is a general principle in both the graphic design and programming communities that it is extremely difficult for someone who worked on a design to review it effectively.

- **Require counties to report the number of overvotes, undervotes, and spoiled ballots.** This reporting, including explanations for rejected ballots — especially when residual vote rates for particular races or ballot items are unusually high — would allow Secretaries of State and other interested groups to determine whether certain ballot designs cause voter confusion and high error rates, and allow them to ensure that similar designs are not employed in the future.[18]

- **Review and amend election laws that prevent counties from employing the most usable ballot designs.** Sometimes, counties are precluded from employing better ballot designs because of restrictive ballot design requirements in state law. Similarly, in making changes to state election laws and regulations unrelated to ballots, officials should carefully consider the potential impact they may have on ballot design and usability. Later in this report, we look at some state laws that could be changed to make it easier for counties to develop more usable ballots.

  While the federal government is unlikely to take steps in the coming months that will have much impact on what ballots look like November, there are some steps that we believe the Election Assistance Commission (the "EAC") can take in the coming months. A federal commission, the EAC has the authority to develop election-related standards for state and local governments and serve as national clearinghouse of election information. (We discuss other potential roles for the federal government in *Directions for the Future*)

- **Ensure that new voting system guidelines include requirements that support good ballot design.** A real frustration for some state and county election officials in the last few years is that their machines are often not flexible enough to allow for the best ballot designs and instructions. The EAC must do more to ensure that all future voting systems are required to give election officials the ability and latitude to employ good ballot design and usability principles. One place to start would be amending the *Voluntary Voting System Guidelines* to require vendors to produce systems that can satisfy the EAC's own ballot design recommendations in *Effective Designs for the Administration of Federal Elections.*

- **Put a greater emphasis on ballot design in the EAC's role as a clearinghouse of election information and resources for local election officials.** The EAC could post images of all types of ballots, from every county, on its website. This would allow election officials from around the country to see how other states and counties address challenging ballot issues through ballot design.

  With the exception of changing state laws, none of these recommended actions for states and counties should require a large expenditure of resources (in time, money, or personnel). At the same time, as the following pages demonstrate, their implementation could save hundreds of thousands of votes, and help the country avoid some of the most painful Election Day fiascos that several states and counties have already endured in the last decade.

Ballot Design Checklist

In designing your ballot, ensure that it satisfies the following guidelines:

☐ **Ballot instructions should be brief, simple, and clear.**

Paper ballots:

- ○ Display general instructions in the top left-hand corner of the ballot. Place specific instructions and related actions together. Do not put all instructions at the beginning of the ballot.
- ○ Let voters know that if they make a mistake, they can get a new ballot. Include this information in the initial instructions.

Electronic ballots:

- ○ Display startup instructions in an easy-to-spot location in the voting booth.
- ○ Place specific instructions and related actions together. Do not put all instructions at the beginning of the ballot.
- ○ Instruct voters to review their selections and provide clear instructions on how to change a selection and cast the ballot.

All ballots:

- ○ In instructions for write-in votes, state plainly that voters should not vote for both a named candidate and a write-in a candidate for the same office.
- ○ Write instructions in an active voice and in positive terms. ("Fill in the oval for your write-in vote to count," rather than, "If the oval is not marked, your vote cannot be counted for the write-in candidate.")
- ○ Use common, easily understood words. ("Move to the next page of the ballot," or "Move to the next screen," rather than "Navigate forward through the ballot.")
- ○ Provide the context of the action first, then the action. ("[Context] To vote for the candidate of your choice, [Action] fill the oval to the left of the candidate's name.")
- ○ Place each instruction on its own line.

☐ Don't split contests.

- ○ List all candidates for the same race on the same page and in the same column.
- ○ Remove the entire column or row for any candidate or party that has been withdrawn or disqualified (not just the candidate or party name).

☐ Make sure ballot design is consistent.

- ○ Use consistent format and style for every contest and voting action.
- ○ Use consistent font type, letter-size, and shading for all contests.
- ○ Place response options (such as fill-in ovals) in a consistent place on the ballot, such as one side of candidate names or ballot question choices.

☐ Make ballots easy to understand visually.

Paper ballots:

- ○ Use the fill-the-oval, rather than the connect-the-arrow, method of selecting a choice in a contest.

Electronic ballots:

- ○ Try to place only one contest on each screen, at least for federal and statewide races.

All ballots:

- ○ Use flush-left text, instead of centered text.
- ○ Display all text in mixed case, rather than all capital letters.
- ○ Use a simple and easy-to-read font, such as Arial or Univers.
- ○ Bold and/or shade certain text, such as office names.
- ○ Use a legible, minimum text size, meeting VVSG requirements, such as 12 points.
- ○ Eliminate extraneous information (e.g., candidate's hometown, occupation, etc.), or design it to avoid visual clutter.

☐ Give voters maximum flexibility.

Electronic ballots:

- ○ Allow voters to select or change the language of the ballot at any time during the voting process.
- ○ Allow voters to change text size and contrast levels and to get audio support at any time during the voting process.

Ballot Design Problems

Confusing ballot layouts led to some of the most well-known Election Day problems of the last decade, including several where the residual vote rate was larger than the margin of victory. In this report, we look at how ballot design problems have affected a group of federal and state races, mostly between 2000 and 2008.

"Residual" or "lost" votes "are typically calculated as the difference between the number of people voting and the number of valid votes cast for a particular office. Residual votes can be undervotes (not selecting any choice on the ballot, either accidentally or intentionally) or overvotes (selecting too many choices, usually accidentally)."[19]

Residual vote rates of more than 1% for "top-of-the-ticket" races, particularly for President, are unusual.[20] They are not a perfect measure of voter error; many voters may make errors by selecting a candidate they did not intend to vote for without undervoting or overvoting, and some voters may decide to skip a race altogether. But unusually high residual vote rates serve as the best available post-election evidence that something went wrong, and that the vote totals may not accurately reflect the will of the voters. As the authors and the Brennan Center Task Force on Ballot Design discovered, when we look at contests with unusually high residual vote rates (particularly top-of-the-ticket contests), we invariably find poor and confusing ballot designs.

Significantly, several studies indicate that residual vote rates are higher in low-income and minority communities and among the elderly, and, in addition, that improvements in voting equipment and ballot design produce substantial drops in residual vote rates in such communities.[21] As a result, the failure of a voting system to protect against residual votes is likely to harm low-income and minority voters, as well as the elderly, more severely than other communities. When residual vote rates exceed the margin of victory between candidates (as occurred in many of the examples discussed below), the result is that the integrity of elections can be called into doubt, as it becomes unclear that the winning candidate was actually the intended choice of a majority of the voters.

We have used residual vote rates for instructional purposes.[22] We do not claim that the poor designs we examine disenfranchised all of the voters who did not record a vote for a particular contest. For the most part, we compare rates in a single county with an obvious ballot design flaw to rates statewide, or from one county to another (where one county ballot has obvious flaws and the other does not). The variances may be attributable to ballot design; they may also be attributed to different demographics from one location to the next, or local interest in a political contest. In most cases, the differences are probably attributable to a combination of these factors.

Nevertheless, the strong correlation between flawed ballot design and instructions on the one hand, and high residual vote rates on the other, is difficult to deny. Invariably, when the authors and the Brennan Center Task Force on Ballot Design reviewed ballots in counties with unusually high residual vote rates, we found a poor design, poorly worded instructions, or (very often) both.

We have identified 13 ballot problems. Each is illustrated with actual ballots and the results from actual elections.

Problem 1

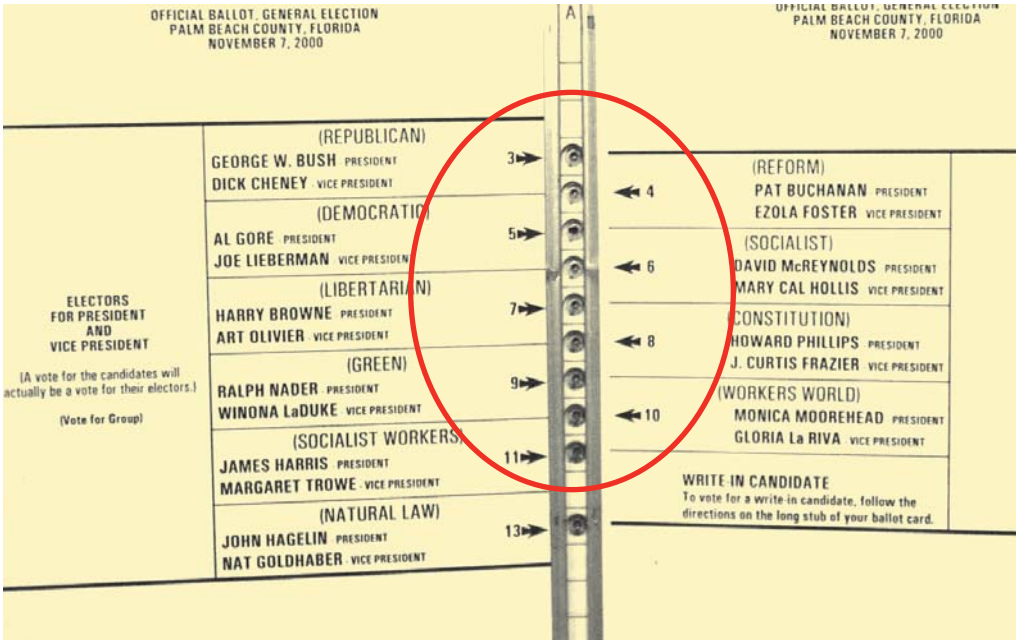
Splitting candidates for the same office onto different pages or columns

Example: The 'Butterfly Ballot'

Palm Beach County, Florida	Residual Vote Rate (in county)	6.2%
2000 General Election	Residual Vote Rate (in state)	2.9%
Affected Race: President	Residual Votes (in county)	28,746 votes
	Margin of Victory (in state)	537 votes

"I was trying to make the print bigger so elderly people in Palm Beach County can read it."

— Theresa LePore, Supervisor of Elections, Palm Beach County



The most famous example of this design flaw is the "butterfly ballot" used in Palm Beach County, Florida during the 2000 presidential election. In a presidential contest decided by fewer than 600 votes, nearly 29,000 ballots in Palm Beach County, or 4% of all ballots cast in the county, were not counted because voters either chose more than one candidate or chose none.[23]

This design was part of a decision to increase the size of the words to help older voters, who often have trouble reading smaller text. Unfortunately, this pushed the presidential race into two columns, resulting in a higher than normal residual vote rate — a problem that was not evident until voters tried to actually use the ballots.

The problem: The vast majority of overvotes and undervotes were almost certainly due to voter confusion resulting from poorly designed ballots that listed candidates in the presidential race across two pages, in an open book type format, and included holes down the center, on which voters could punch out their selections.[24] George W. Bush and Al Gore were listed as the first and second candidates on the left-hand page; Pat Buchanan was the first candidate listed on the right-hand page. Voters reading the ballot in traditional book-form, i.e., from top left to bottom left, followed by top right to bottom right, likely read Gore as the second name and punched the second hole without realizing that the second hole corresponded with a vote for Buchanan.

The result: Pat Buchanan received 3,411 votes in Palm Beach County — more than three times what he received in other Florida counties.[25] The butterfly ballot likely caused more than 2,000 Democratic voters to mistakenly vote for Pat Buchanan.[26]

Example: Multiple Pages for One Contest

Duval County, Florida	Residual Vote Rate (in county)	9.3%
2000 General Election	Residual Vote Rate (in state)	2.9%
Affected Race: President		

In the same 2000 presidential election, Duval County, Florida used a different two-page design.

The problem: As on the Palm Beach ballot, candidates for the same race were listed on separate pages. The ten presidential candidates were listed on two pages, five on the first and five on the second. This ballot was used in an area "where Democrats had mounted an intensive effort to register new voters." [27] The voter education materials included a reminder to be sure to "vote that second place."

The result: Nearly 22,000 votes were thrown out because voters voted for one candidate on the first page and another candidate on the second.[28] More than 40% of these were concentrated in four predominantly black council districts in Jacksonville, Florida.

Just two years after the Palm Beach County ballot design debacle, and the same year as the Help America Vote Act was passed, Kewaunee County, Wisconsin used a ballot that listed candidates for Governor in two different columns. The residual vote rate for the Governor's race in Kewaunee County was nearly eleven times the rate in the rest of the state.

Example: Candidates Listed in Two Columns

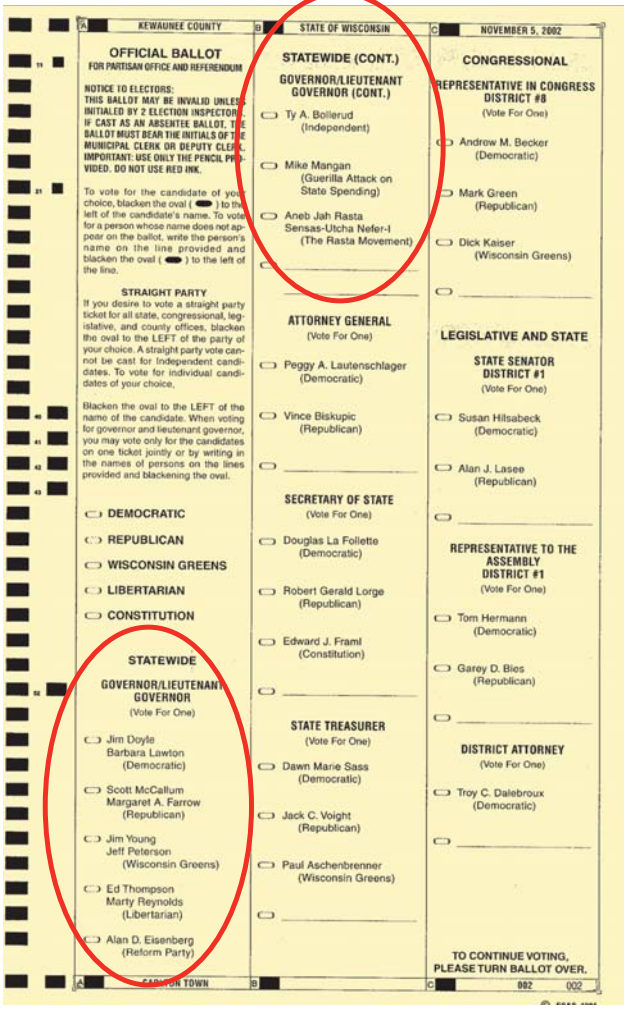
Kewaunee County, Wisconsin	Residual Vote Rate (in county)	11.8%
2002 General Election	Residual Vote Rate (in state)	1.1%
Affected Race: Governor		

The problem: Just two years later, in Kewaunee County, Wisconsin, voters were presented with a ballot that divided the Governor's race into two columns.

The result: Not surprisingly, the Kewaunee County ballot led to many mistakes in the Governor's race, with an astounding 11.8% of voters recording no vote for this race (in contrast to a 1.1% residual vote rate statewide for this race). No doubt, many of these lost votes were caused because voters selected one candidate from the first column and one from the second, rendering their vote in the Governor's race invalid.

Jim Doyle won the state by a comfortable margin, but the more than 700 residual votes in Kewaunee County apparently caused by this poor ballot design far exceeded the 400 vote margin between the two gubernatorial candidates in the county.

Existing Ballot



KEWAUNEE COUNTY | STATE OF WISCONSIN | NOVEMBER 5, 2002

OFFICIAL BALLOT
FOR PARTISAN OFFICE AND REFERENDUM

NOTICE TO ELECTORS:
THIS BALLOT MAY BE INVALID UNLESS INITIALED BY 2 ELECTION INSPECTORS. IF CAST AS AN ABSENTEE BALLOT, THE BALLOT MUST BEAR THE INITIALS OF THE MUNICIPAL CLERK OR DEPUTY CLERK.
IMPORTANT: USE ONLY THE PENCIL PROVIDED. DO NOT USE RED INK.

To vote for the candidate of your choice, blacken the oval ( ) to the left of the candidate's name. To vote for a person whose name does not appear on the ballot, write the person's name on the line provided and blacken the oval ( ) to the left of the line.

STRAIGHT PARTY
If you desire to vote a straight party ticket for all state, congressional, legislative, and county offices, blacken the oval to the LEFT of the party of your choice. A straight party vote cannot be cast for Independent candidates. To vote for individual candidates of your choice,

Blacken the oval to the LEFT of the name of the candidate. When voting for governor and lieutenant governor, you may vote only for the candidates on one ticket jointly or by writing in the names of persons on the lines provided and blackening the oval.

- DEMOCRATIC
- REPUBLICAN
- WISCONSIN GREENS
- LIBERTARIAN
- CONSTITUTION

STATEWIDE
GOVERNOR/LIEUTENANT GOVERNOR
(Vote For One)
- Jim Doyle / Barbara Lawton (Democratic)
- Scott McCallum / Margaret A. Farrow (Republican)
- Jim Young / Jeff Peterson (Wisconsin Greens)
- Ed Thompson / Marty Reynolds (Libertarian)
- Alan D. Eisenberg (Reform Party)

STATEWIDE (CONT.)
GOVERNOR/LIEUTENANT GOVERNOR (CONT.)
- Ty A. Bollerud (Independent)
- Mike Mangan (Guerilla Attack on State Spending)
- Aneb Jah Rasta Sensas-Utcha Nefer-I (The Rasta Movement)

ATTORNEY GENERAL
(Vote For One)
- Peggy A. Lautenschlager (Democratic)
- Vince Biskupic (Republican)

SECRETARY OF STATE
(Vote For One)
- Douglas La Follette (Democratic)
- Robert Gerald Lorge (Republican)
- Edward J. Framl (Constitution)

STATE TREASURER
(Vote For One)
- Dawn Marie Sass (Democratic)
- Jack C. Voight (Republican)
- Paul Aschenbrenner (Wisconsin Greens)

CONGRESSIONAL
REPRESENTATIVE IN CONGRESS DISTRICT #8
(Vote For One)
- Andrew M. Becker (Democratic)
- Mark Green (Republican)
- Dick Kaiser (Wisconsin Greens)

LEGISLATIVE AND STATE
STATE SENATOR DISTRICT #1
(Vote For One)
- Susan Hilsabeck (Democratic)
- Alan J. Lasee (Republican)

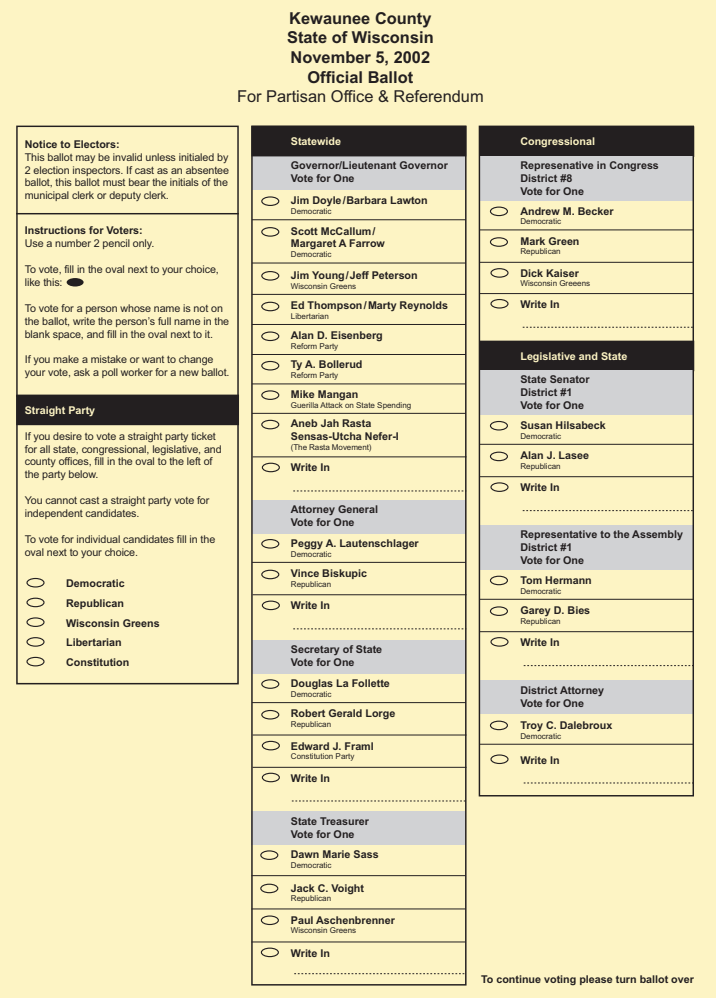
REPRESENTATIVE TO THE ASSEMBLY DISTRICT #1
(Vote For One)
- Tom Hermann (Democratic)
- Garey D. Bies (Republican)

DISTRICT ATTORNEY
(Vote For One)
- Troy C. Dalebroux (Democratic)

TO CONTINUE VOTING, PLEASE TURN BALLOT OVER.

CASTON TOWN | 002 | 002

Re-designed Ballot



Kewaunee County
State of Wisconsin
November 5, 2002
Official Ballot
For Partisan Office & Referendum

Notice to Electors:
This ballot may be invalid unless initialed by 2 election inspectors. If cast as an absentee ballot, this ballot must bear the initials of the municipal clerk or deputy clerk.

Instructions for Voters:
Use a number 2 pencil only.

To vote, fill in the oval next to your choice, like this: ⬬

To vote for a person whose name is not on the ballot, write the person's full name in the blank space, and fill in the oval next to it.

If you make a mistake or want to change your vote, ask a poll worker for a new ballot.

Straight Party

If you desire to vote a straight party ticket for all state, congressional, legislative, and county offices, fill in the oval to the left of the party below.

You cannot cast a straight party vote for independent candidates.

To vote for individual candidates fill in the oval next to your choice.

- ⬭ Democratic
- ⬭ Republican
- ⬭ Wisconsin Greens
- ⬭ Libertarian
- ⬭ Constitution

Statewide

Governor/Lieutenant Governor
Vote for One
- ⬭ Jim Doyle/Barbara Lawton — Democratic
- ⬭ Scott McCallum/Margaret A Farrow — Democratic
- ⬭ Jim Young/Jeff Peterson — Wisconsin Greens
- ⬭ Ed Thompson/Marty Reynolds — Libertarian
- ⬭ Alan D. Eisenberg — Reform Party
- ⬭ Ty A. Bollerud — Reform Party
- ⬭ Mike Mangan — Guerilla Attack on State Spending
- ⬭ Aneb Jah Rasta Sensas-Utcha Nefer-I — (The Rasta Movement)
- ⬭ Write In .....

Attorney General
Vote for One
- ⬭ Peggy A. Lautenschlager — Democratic
- ⬭ Vince Biskupic — Republican
- ⬭ Write In .....

Secretary of State
Vote for One
- ⬭ Douglas La Follette — Democratic
- ⬭ Robert Gerald Lorge — Republican
- ⬭ Edward J. Framl — Constitution Party
- ⬭ Write In .....

State Treasurer
Vote for One
- ⬭ Dawn Marie Sass — Democratic
- ⬭ Jack C. Voight — Republican
- ⬭ Paul Aschenbrenner — Wisconsin Greens
- ⬭ Write In .....

Congressional

Representative in Congress
District #8
Vote for One
- ⬭ Andrew M. Becker — Democratic
- ⬭ Mark Green — Republican
- ⬭ Dick Kaiser — Wisconsin Greens
- ⬭ Write In .....

Legislative and State

State Senator
District #1
Vote for One
- ⬭ Susan Hilsabeck — Democratic
- ⬭ Alan J. Lasee — Republican
- ⬭ Write In .....

Representative to the Assembly
District #1
Vote for One
- ⬭ Tom Hermann — Democratic
- ⬭ Garey D. Bies — Republican
- ⬭ Write In .....

District Attorney
Vote for One
- ⬭ Troy C. Dalebroux — Democratic
- ⬭ Write In .....

To continue voting please turn ballot over

Includes our recommendation for the use of fill-the-oval instead of complete-the-arrow response method. Not all machines can read ovals.

Problem 2 Placing different contests on the same touch screen

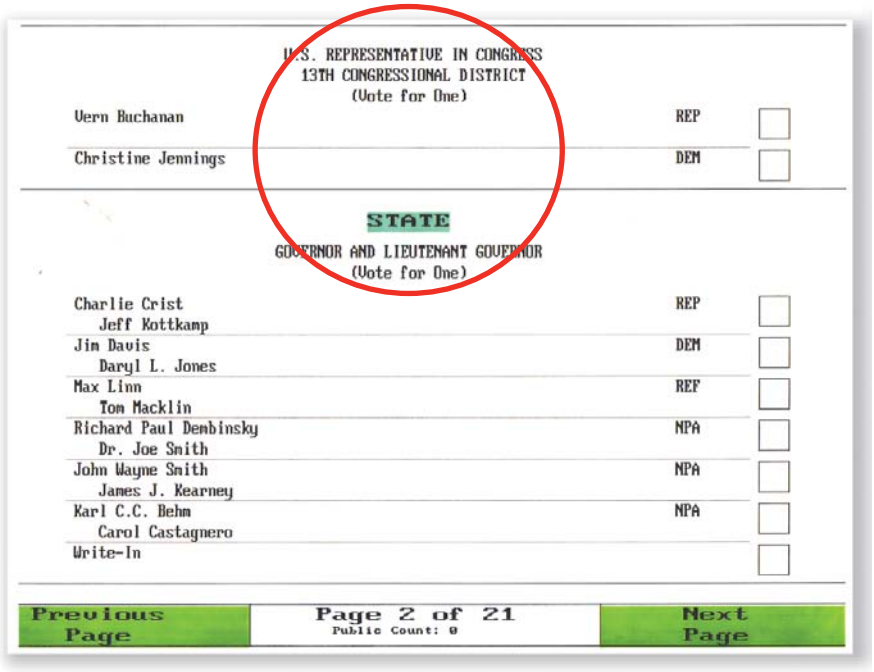
With paper ballots, it is best to display candidates for the same office on the same page or column; similarly, it is best, when using electronic ballots, to place candidates for just one race on a single computer screen. This is a basic principle of interface usability: automated teller machines and movie kiosks generally ask one question at a time and proceed to a new screen only after the user has answered the question on a previous screen. (For example, ATM machines ask the user, first to "Enter PIN Number," then, after the PIN number is entered, proceeds to the next screen and asks the user to "Select Account for Withdrawal") There is a simple reason for this kind of structure: people are far more likely to miss questions if they are asked to answer more than one at a time.

Two races in Sarasota and Charlotte Counties, Florida provide an instructive lesson in the dangers of putting more than one race on the same page.

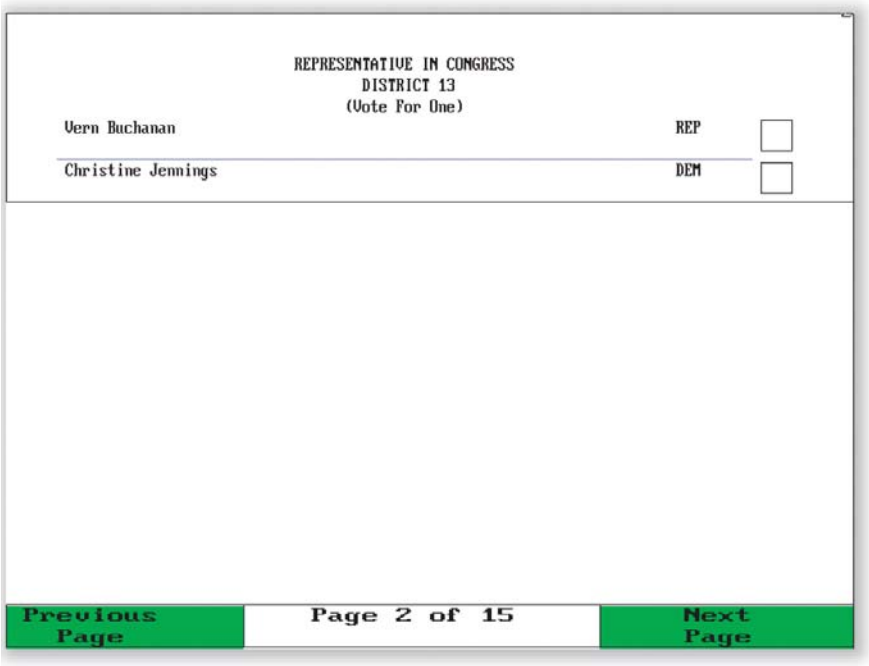
Example: Placing Two Contests on One Screen

Sarasota County, Florida	Residual Vote Rate (in county)	13.9%
2006 General Election	Residual Vote Rate (Cong. district)	2.5%
Affected Race:	Residual Votes (in county)	18,413 votes
U.S. Representative	Margin of Victory (in Cong. district)	369 votes

Problem Ballot: Sarasota County



Better Ballot: Charlotte County[29]



In the race to replace Katherine Harris in Congress, officials declared Republican Vern Buchanan the victor over Democrat Christine Jennings by a margin of less than 400 votes.[30] There is a very strong likelihood that the ballot design affected the outcome of the Congressional contest.[31]

The problem: The electronic interface displayed candidates for the Congressional district race on the same screen with candidates for the Governor/Lt. Governor's race. Undoubtedly the problems that arose as a result of this violation of the principle that electronic interfaces should display one contest at a time were exacerbated by the fact that the word "STATE," in highlighted blue letters, drew voters' attention away from the first race and towards the second.

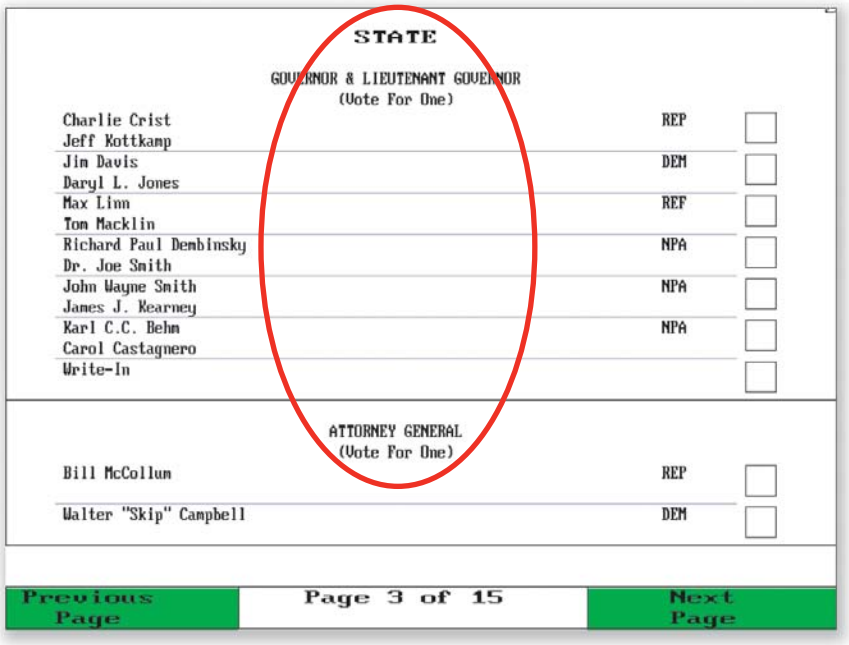
The result: More than 14,000 of the voters presented with this ballot cast invalid votes in the race, for a residual rate of 13.9%. Undervote rates were significantly higher in La Casa Mobile Home Park, a retirement community for seniors, where 30% of votes cast on DREs were not recorded in the Congressional district race.[32]

The County Supervisor of Elections instructed poll workers to warn voters not to miss this race,[33] but the residual vote rate for Election Day voters was much higher than the residual vote rate for Sarasota County voters who cast absentee and provisional ballots (2.5%) or in neighboring Charlotte County which displayed the Congressional district race on its own page (2.5%).[34]

Example: Placing Two Contests on One Screen

Charlotte County, Florida	Residual Vote Rate (in county) 20.9%
2006 General Election	Residual Vote Rate (in state) 4.9%
Affected Race: Attorney General	

Charlotte County Ballot Page [34]



While there have been several credible theories offered for the cause of the high residual vote rate in the Congressional race in Sarasota County in 2006, it is undeniable that the ballot design employed in this race has correlated with high residual vote rates in other contests.

The problem: Although Charlotte County avoided high residual vote rates in the Congressional district race by displaying just that contest on a single page, the County deviated from this practice on ballot pages for state races, placing the gubernatorial and attorney general races on the same page in a layout very similar to the one employed for the Congressional and gubernatorial races in Sarasota County.

The result: The residual vote rate in Charlotte County for the attorney general race was 20.9%, compared to 4.3% in Sarasota County. Statewide, the residual vote rate for the attorney general race was 4.9%.

Again, poor ballot design and instructions was almost certainly a major factor (and probably the major factor) causing the high undervote rate.

Within days of the polls' closing in Sarasota County in 2006, there was rampant speculation that some kind of software or hardware problem had caused the large undervote rate.[36] In response, the United States Government Accountability Office ("GAO") conducted three tests to determine whether there was an "equipment malfunction" in Sarasota County on Election Day. Based on these tests, the GAO concluded that there was no equipment malfunction.[37] The GAO added that the undervotes might be explained "by factors such as voters who unintentionally undervoted, or voters who did not properly cast their ballots on the iVotronic DRE, potentially because of issues related to interaction between voters and the ballot."[38] Surely there is a difference between these alternatives.

Interestingly, the GAO made no recommendation for further analysis. Implying, perhaps inadvertently, that the voters themselves were to blame for the undervotes, the GAO requested no further investigation into the question of whether ballot design played a part in the high undervote rate.

Problem 3 Placing response options on both sides of candidate names

Placing response options for voters on both sides of a candidate's name is a problem that is often presented by optical scan ballots which tend to list two or three columns of offices and candidate names on a single page. This may have confused voters in Illinois' Hamilton County in 2002.

Example: Arrows on Both Sides of a Candidate's Name

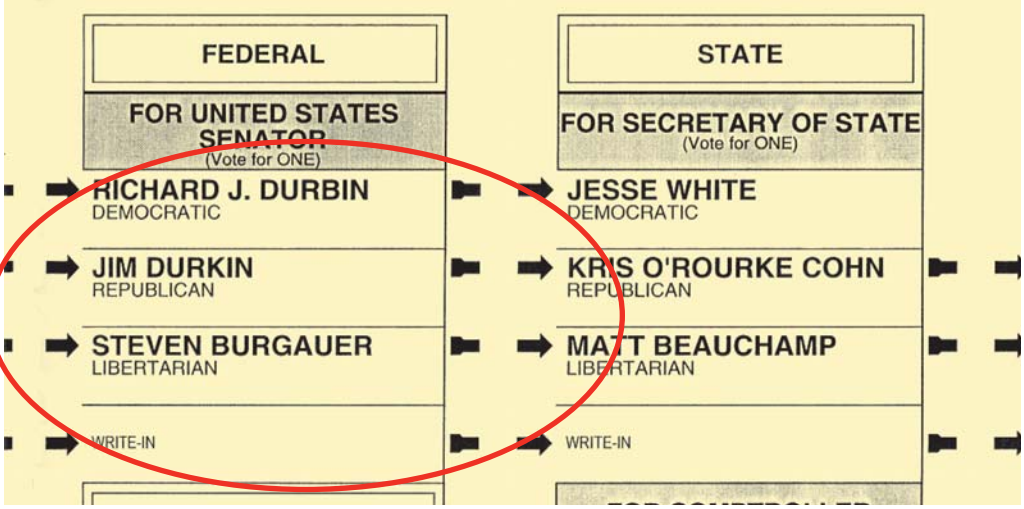
Hamilton County, Illinois	Affected Race: U.S. Senate	
2002 General Election	Residual Vote Rate (in county)	9.3%
	Residual Vote Rate (in state)	4.5%
	Affected Race: Governor	
	Residual Vote Rate (in county)	5.0%
	Residual Vote Rate (in state)	3.1%

The problem: The races at the top of the first and second columns line up exactly. Reading left-to-right, many voters mistakenly marked the arrow to the right of a candidate's name instead of the arrows to the left. Although the ballot instructions direct voters to complete the arrows to the left of their choices, there are few visual cues on the page. The small amount of space between columns makes it hard for voters to tell which arrow corresponds with the candidate for whom they'd like to vote.

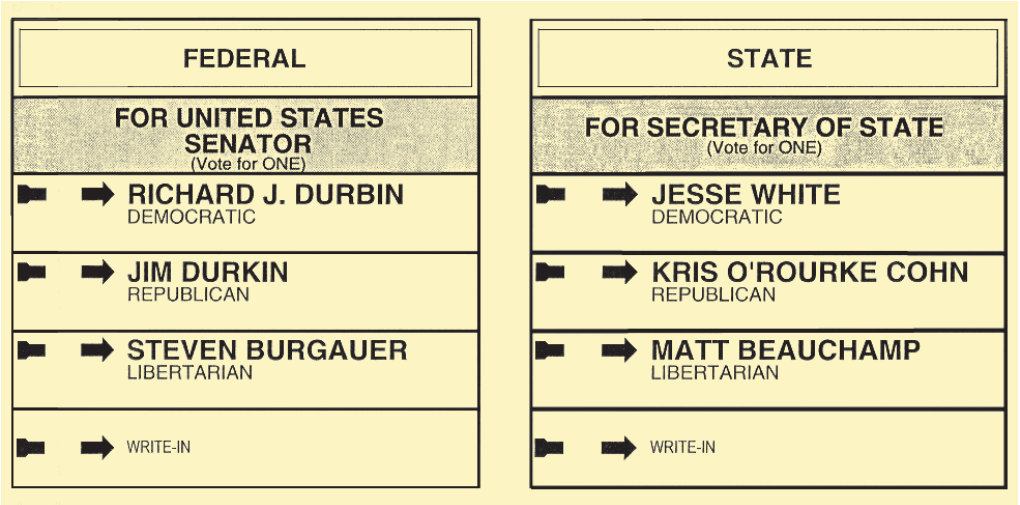
One way to address this problem would have been to visually "box" the candidates with their respective response arrows, or to provide a clear space between the columns. Either would have decreased the likelihood of voter error.

The result: The residual vote rate for the U.S. Senate race in Hamilton County was 9.3%, compared to the statewide rate of 4.5%. This problem also affected the Governor's race. Hamilton County had a 5.0% residual vote in that race, compared to 3.1% statewide.

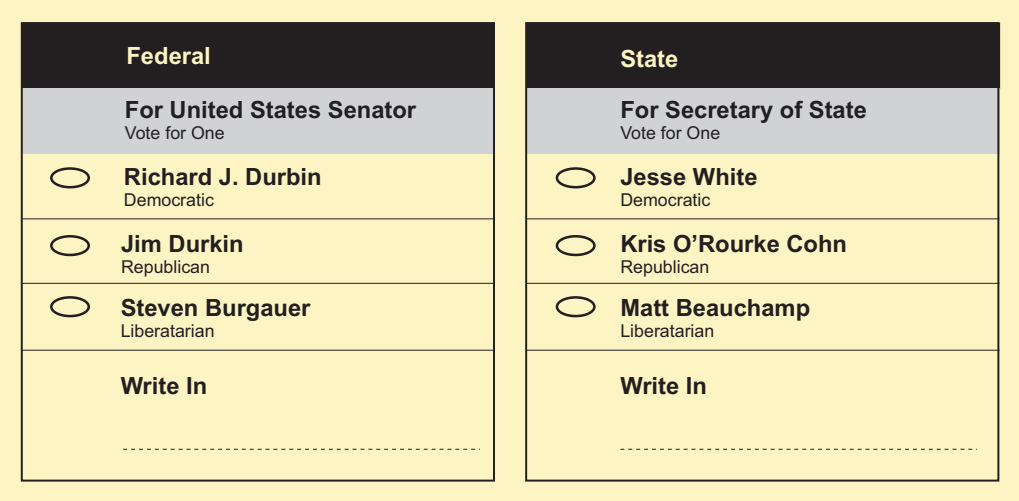
Existing Ballot



Existing Ballot
with minor change.



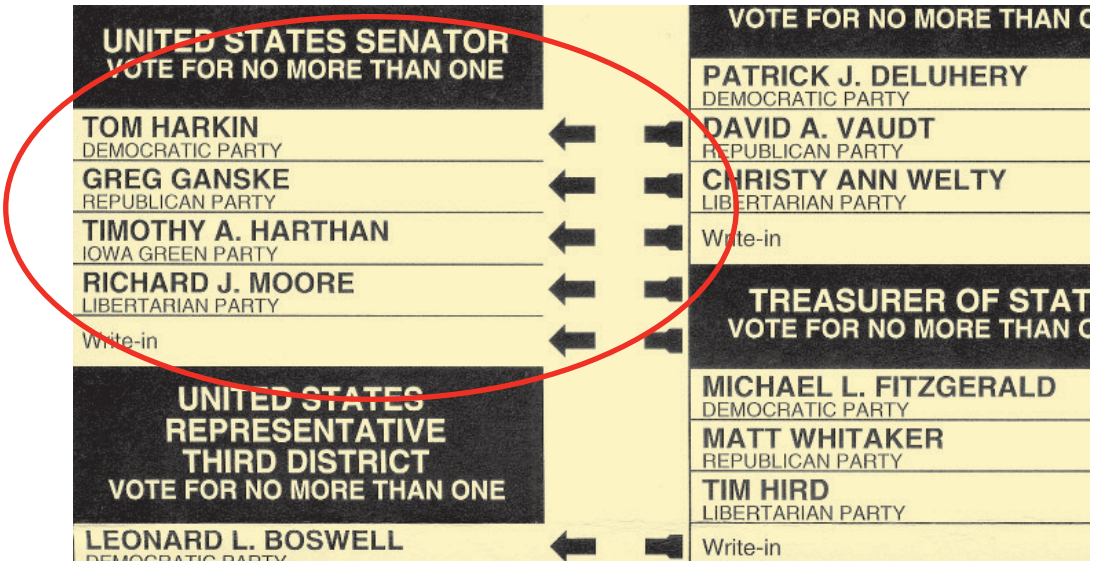
Re-designed ballot: includes our recommendation for the use of fill-the-oval instead of complete-the-arrow response method. Not all machines can read ovals.



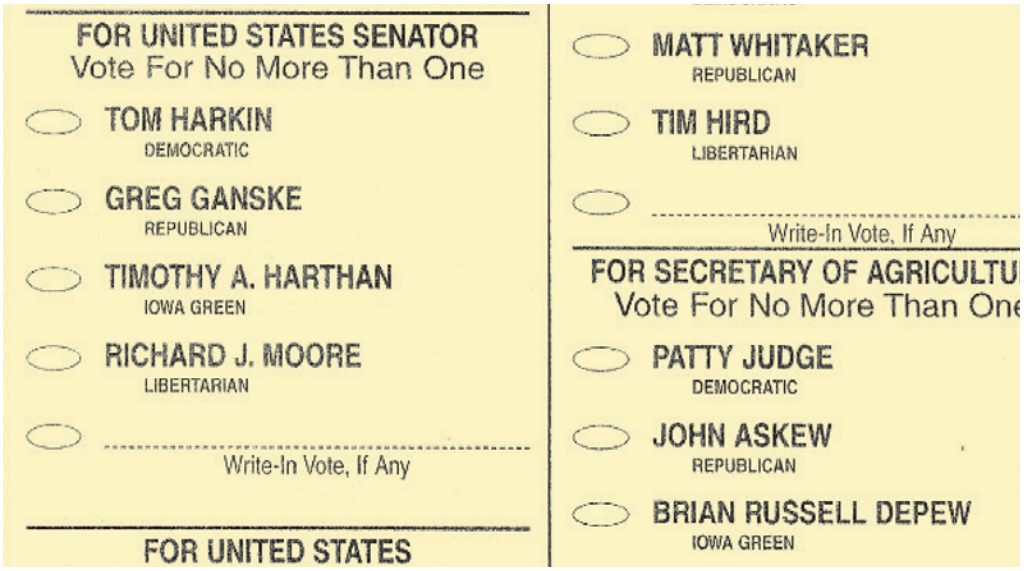
Problem 4 Using "complete-the-arrow" instead of "fill-the-oval" response options

Some optical scan systems require voters to "complete-the-arrow" to cast a vote, rather than "fill-the-oval."

Polk County, Iowa 2002[39]



Dallas County, Iowa 2002



Another design element that makes fill-in ovals better than arrows is that on the ballot page, they are closer in proximity to the choice to be marked than arrows are. It is easier to see where to vote for whom because horizontal alignment issues are minimal, especially for paired races, such as that for President and Vice President.

The problem: Filling in ovals or bubbles is a more familiar task than completing an arrow, since standardized tests, lottery tickets and other commonly used forms include fill-in-the-oval response systems. Nationally, complete-the-arrow ballots result in higher rates of residual votes, and substantially higher rates of overvotes.[40]

The result: During the 2004 general election, ballots that required voters to darken an oval produced a residual vote rate of 0.6% on precinct count optical scan machines, while those that required voters to connect an arrow with a line to a candidate produced a rate of 0.9%.

Table 1: Residual Votes in Optical Scan Ballots by Type of Voting Mark in the 2004 Presidential Election[41]

Voting System Type	Fill-the-Oval	Complete-the-Arrow
Precinct Count Optical Scan	0.6%	0.9%
Central Count Optical Scan	1.6%	2.3%

It is likely that the difference was greater when jurisdictions use central count optical scan machines because voters who use these machines don't have the opportunity to correct errors on their ballots, even those the scan machines catch, since these machines are generally used to count votes that have been cast elsewhere (in a polling place or absentee).

In total, we estimate that roughly 45,000 extra residual votes were cast in the 2004 presidential election due to use of the connect-the-arrow feature.[42]

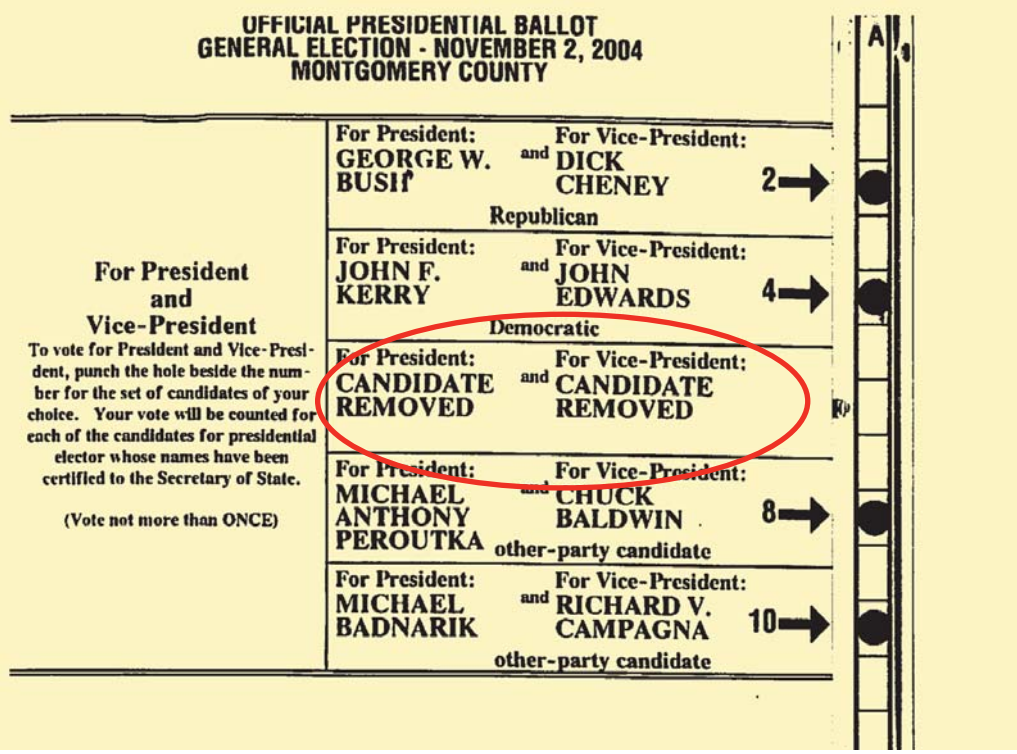
Problem 5 Leaving columns or rows for disqualified candidates

Election officials commonly change ballots in the weeks before an election since candidates sometimes withdraw after deadlines have passed or are disqualified as a result of a legal challenge. In the Ohio 2004 general election, Ralph Nader was disqualified from the presidential ballot by Secretary Blackwell on September 29, and this decision was upheld by the Ohio Supreme Court on October 25, just one week before Election Day.[43]

When possible, jurisdictions should, in these circumstances, entirely remove the rows or columns in which a candidate was to appear. To see why, it is worthwhile to examine the November 2004 ballot in Montgomery County, Ohio.

Example: "Candidate Removed" Placed as Third of Five Candidates on the Ballot

Montgomery County, Ohio	Overvote Vote Rate	
2004 General Election	(with this ballot rotation)	2.6%
Affected Race: President	Overvote Vote Rate	
	(with other ballot rotations)	1.1%



The problem: Ohio law requires election officials to rotate, by precinct, the names of candidates for each race.[44] But, by the time Nader was disqualified in 2004, many counties in Ohio had already programmed their scan machines to read ballots that included Nader as a candidate.[45] As a result, several counties placed the words "Candidate Removed" in the row in which Ralph Nader would have appeared. This caused many lost votes in Ohio.

The result: In every fifth precinct in Montgomery County, Ohio, the ballot looked like the one reproduced above, on which two well-known candidates (Bush and Kerry) appeared first, followed by "Candidate Removed," followed by two lesser known candidates (Peroutka and Badnarik). Much higher overvoting resulted in precincts with this order; presumably, some voters viewed this presentation of the race as two races — the first between Bush and Kerry, the second between Peroutka and Badnarik. By voting in "both" of these races, no vote was recorded.

As Ellis Jacobs noted in "Spoiled Ballots: Under and Overvotes in the 2004 General Election in Montgomery County, Ohio," in the 33 precincts in Dayton in which voters saw this ballot rotation, approximately 2.6% of all voters overvoted. This compares to just 1.1% of voters in Dayton that saw other rotations.[46]

As with other confusing ballot designs, low-income and minority voters were disproportionately affected by this problem. Of the 20 precincts with the highest residual vote rates, 17 were in Dayton, where the median household income was $27,423 (compared to $46,015 for the rest of the county), 23% of individuals lived below the poverty level (compared to 6.6% for the rest of the county), and 43% were African American (compared to 10% for the rest of the county).[47] The precincts most dramatically affected were among those with the lowest income.[48]

Table 2: Highest Rates of Residual Voting in Dayton, Ohio

Precinct Number	Residual Vote Rate
Precinct 14A	15.56%
Precinct 3L	8.47%
Precinct 21B	8.2%
Precinct 22C	7.51%

The first of these was the Veterans Administration Center where resident veterans voted. The second was a precinct full of public housing projects. It is 83% African American. The third was "a compact residential neighborhood in North West Dayton bounded by Cornell, Wesleyan and Otterbein. The housing there is almost exclusively comprised of four unit, single story apartments which appear to be part of a single complex. Many of them are boarded up."[49] The area is 91% African American. The final precinct is a residential area "overlooking the Dayton Tire brownfield site." It is 95% African American. All four precincts are "very low income neighborhoods."[50]

One obvious lesson of the high residual vote rates created by the rotation described above is that everything possible should be done to ensure that the row reserved for disqualified candidates is eliminated from all ballots. But even where this is impossible, there are steps that might be taken to avoid some of the problems that occurred in Montgomery County. It is quite possible that if officials in Montgomery County had conducted the kind of usability testing discussed in *Policy Recommendations*, they would have discovered what became obvious after the election was over: that the particular rotation that left "Candidate Removed" in the middle of the contest was likely to cause some voters to overvote. At that point, election officials could have made extra effort to alert all voters that "Candidate Removed" in the list of candidates in the Presidential race represented the place on the ballot that Ralph Nader's name would have appeared had he not been disqualified, and that voters should cast only one vote among the remaining four candidates.

They also could have conducted testing of alternatives to determine whether other solutions might have improved voter performance. For example, they could have placed an instruction like "Vote for ONE of these four sets of candidates" in the empty slot.

Problem 6 Inconsistency in format and style

When voters look at a ballot, they must be able to identify separate voting tasks and differentiate between races and ballot measures. Font size and weight and care in layout discussed above contribute to a more detailed visual organization of a ballot. Designs that incorporate improper text formatting often induce voters to inadvertently skip races. We have detailed the problems that arose in Sarasota County in 2006 after that county deployed a ballot that displayed different contests on the same page. Usability experts have identified another problem with the Sarasota County ballot: inconsistency in the format and style of each DRE page.[51]

Many problematic ballot designs present voters with an inconsistent design that leads to mistakes. The butterfly ballot used in Palm Beach County was poorly designed; the fact that it was inconsistent with how other contests were presented made matters worse. Displaying the names of Wisconsin gubernatorial candidates in two columns on ballots, Kewaunee County in 2002 probably confused voters — even more so, because the gubernatorial race was the only one displayed this way. Finally, discussed later this report, voters are often confused by inconsistent appearances of sample and actual ballots.

Of course, ballot designers should not aim for consistently bad design. But a lack of consistency in ballot design or election materials like sample ballots should be a warning sign to election officials and concerned members of the public.

Example: Inconsistent Headings

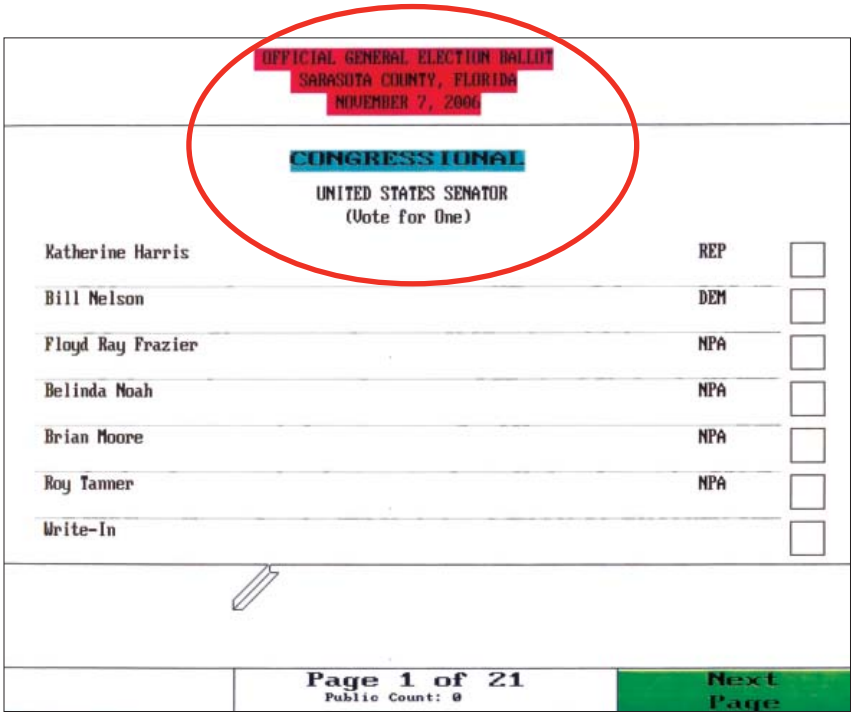
Sarasota County, Florida	Residual Vote Rate (in county)	13.9%
2006 General Election	Residual Vote Rate (in Cong. district)	2.5%
Affected Race:	Residual Votes (in county)	18,413 votes
U.S. Representative	Margin of Victory (in Cong. district)	369 votes

The problem: The first page of the Sarasota ballot had just one race, with the header "Congressional" highlighted in blue. Many voters acting on visual clues provided in the first page expected there to be but one contest on the following pages as well.

The inconsistent application of this formatting from page to page could have caused many voters to focus immediately on the gubernatorial race and miss the Congressional race displayed above it.

We've seen other problems with a lack of ballot format consistency in the past.

Sarasota County, Florida, Official Election Ballot


OFFICIAL GENERAL ELECTION BALLOT
SARASOTA COUNTY, FLORIDA
NOVEMBER 7, 2006

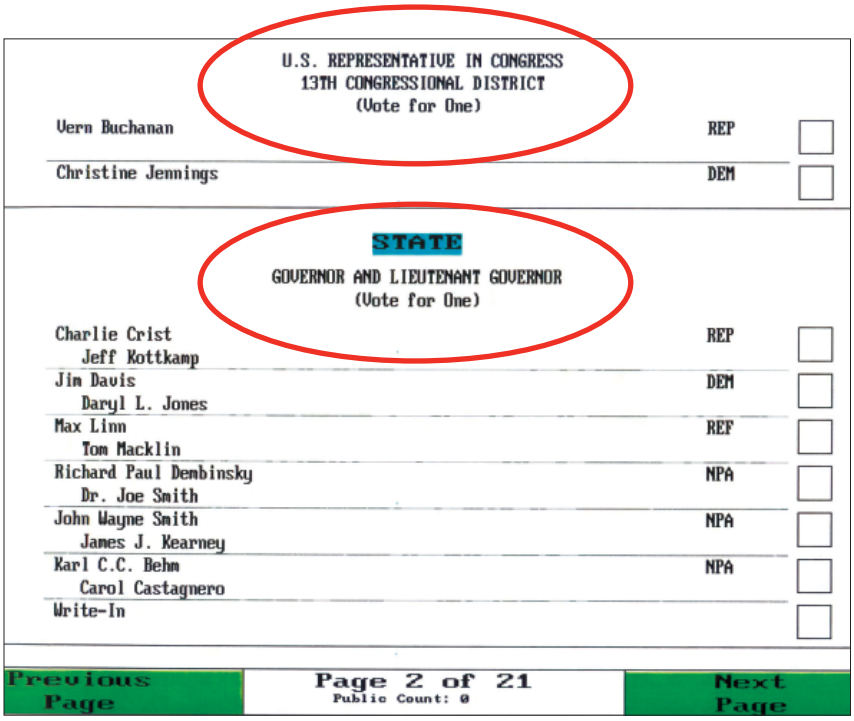
CONGRESSIONAL

UNITED STATES SENATOR
(Vote for One)

Katherine Harris	REP
Bill Nelson	DEM
Floyd Ray Frazier	NPA
Belinda Noah	NPA
Brian Moore	NPA
Roy Tanner	NPA
Write-In	

Page 1 of 21
Public Count: 0
Next Page

Page 1 of 21


U.S. REPRESENTATIVE IN CONGRESS
13TH CONGRESSIONAL DISTRICT
(Vote for One)

Vern Buchanan	REP
Christine Jennings	DEM

STATE

GOVERNOR AND LIEUTENANT GOVERNOR
(Vote for One)

Charlie Crist Jeff Kottkamp	REP
Jim Davis Daryl L. Jones	DEM
Max Linn Tom Macklin	REF
Richard Paul Dembinsky Dr. Joe Smith	NPA
John Wayne Smith James J. Kearney	NPA
Karl C.C. Behm Carol Castagnero	NPA
Write-In	

Previous Page
Page 2 of 21
Public Count: 0
Next Page

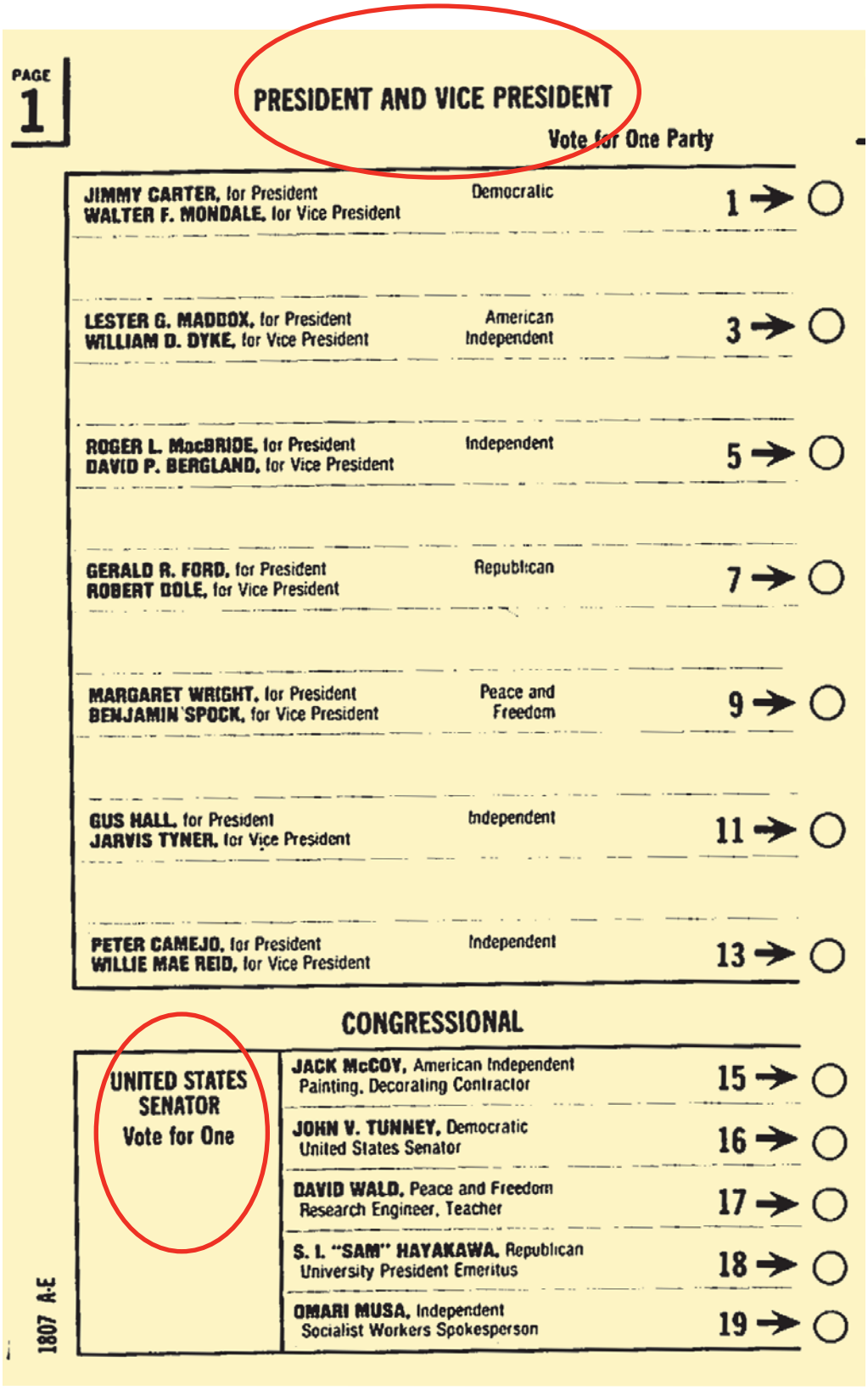
Page 2 of 21

Example: Inconsistent Headings

Los Angeles County, California	Residual Vote Rate (in county)	17.0%
1976 General Election	Residual Vote Rate (in rest of state)	4.1%
Affected Race: U.S. Senate	Residual Votes (in county)	436,864 votes
	Margin of Victory (in state)	246,111 votes

The problem: The office title and voting instructions for the presidential race on the 1976 Los Angeles County ballot were listed above the candidates' names, whereas for the U.S. Senate race, the office title and voting instructions appeared to the left of the candidates' names, where it was less likely to be noticed.

The result: Not surprisingly, while the residual vote rate for president in Los Angeles County was relatively low at 4%, it was an astounding 17.2% for the Senate race, with 436,864 votes not counted. This loss of votes was larger than the statewide margin of victory for Republican Senate candidate S.I Hayakawa, who won by only 246,111 votes. In contrast to Los Angeles County, the residual vote rate for the Senate race in the rest of the state was just 4.1%.



PAGE 1

PRESIDENT AND VICE PRESIDENT

Vote for One Party

JIMMY CARTER, for President **WALTER F. MONDALE**, for Vice President	Democratic	1 → ○
LESTER G. MADDOX, for President **WILLIAM D. DYKE**, for Vice President	American Independent	3 → ○
ROGER L. MacBRIDE, for President **DAVID P. BERGLAND**, for Vice President	Independent	5 → ○
GERALD R. FORD, for President **ROBERT DOLE**, for Vice President	Republican	7 → ○
MARGARET WRIGHT, for President **BENJAMIN SPOCK**, for Vice President	Peace and Freedom	9 → ○
GUS HALL, for President **JARVIS TYNER**, for Vice President	Independent	11 → ○
PETER CAMEJO, for President **WILLIE MAE REID**, for Vice President	Independent	13 → ○

CONGRESSIONAL

UNITED STATES SENATOR
Vote for One

JACK McCOY, American Independent Painting, Decorating Contractor	15 → ○
JOHN V. TUNNEY, Democratic United States Senator	16 → ○
DAVID WALD, Peace and Freedom Research Engineer, Teacher	17 → ○
S. I. "SAM" HAYAKAWA, Republican University President Emeritus	18 → ○
OMARI MUSA, Independent Socialist Workers Spokesperson	19 → ○

1807 A-E

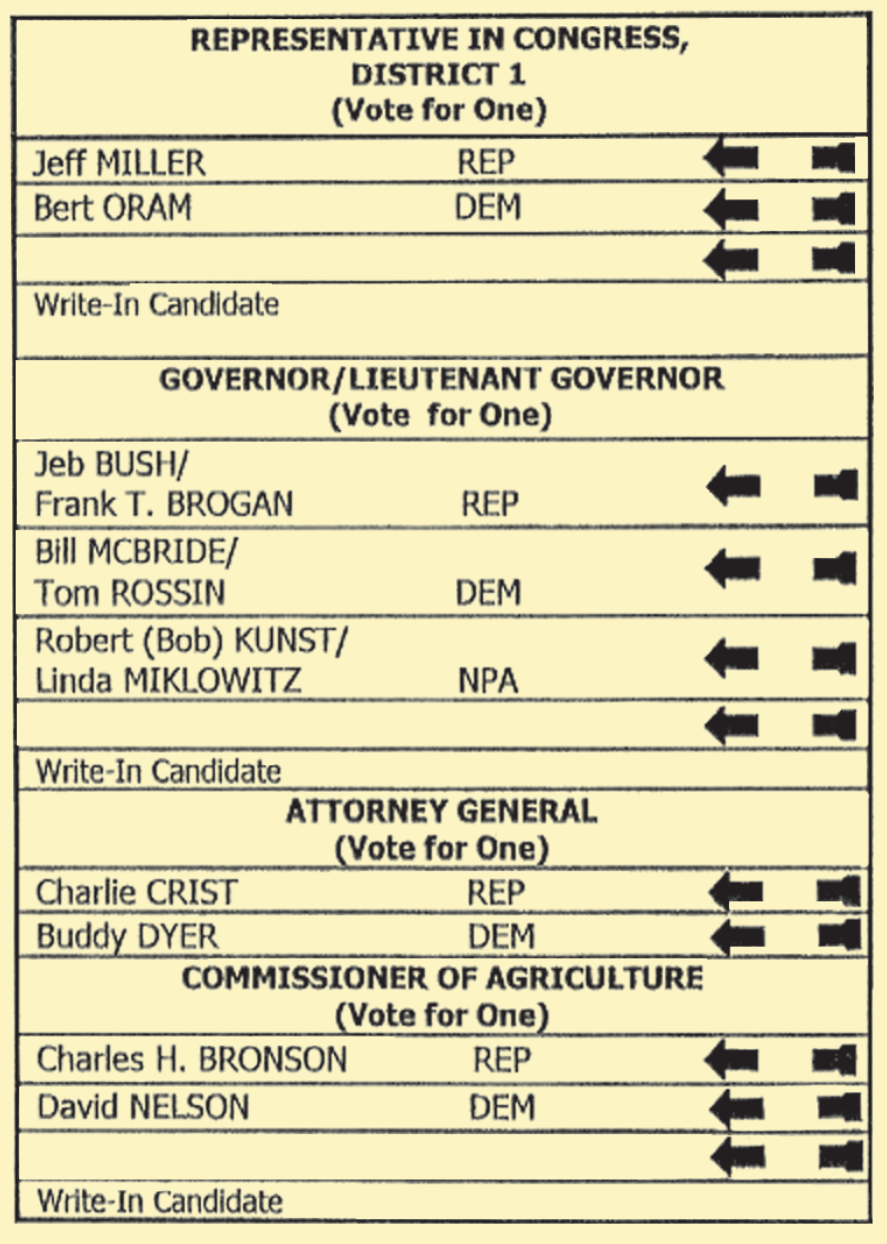
Problem 7 Not using shading to help voters differentiate between voting tasks

Proper shading and clear borders between ballot items help voters easily identify separate voting tasks and differentiate between races and ballot measures. Failure to shade office titles, for instance, can make differentiating between races difficult, as we see in this ballot from Escambia County, Florida in 2002.

Example: Headings with No Shading

Escambia County, Florida 2002 General Election	Affected Race: Attorney General	
	Residual Vote Rate (in Escambia County)	2.5%
	Residual Vote Rate (in Bay County)	2.2%
	Affected Race: Commissioner of Agriculture	
	Residual Vote Rate (in Escambia County)	4.6%
	Residual Vote Rate (in Bay County)	4.3%

Escambia County, Florida Ballot



REPRESENTATIVE IN CONGRESS, DISTRICT 1
(Vote for One)

Jeff MILLER	REP	← →
Bert ORAM	DEM	← →
		← →
Write-In Candidate		

GOVERNOR/LIEUTENANT GOVERNOR
(Vote for One)

Jeb BUSH/ Frank T. BROGAN	REP	← →
Bill MCBRIDE/ Tom ROSSIN	DEM	← →
Robert (Bob) KUNST/ Linda MIKLOWITZ	NPA	← →
		← →
Write-In Candidate		

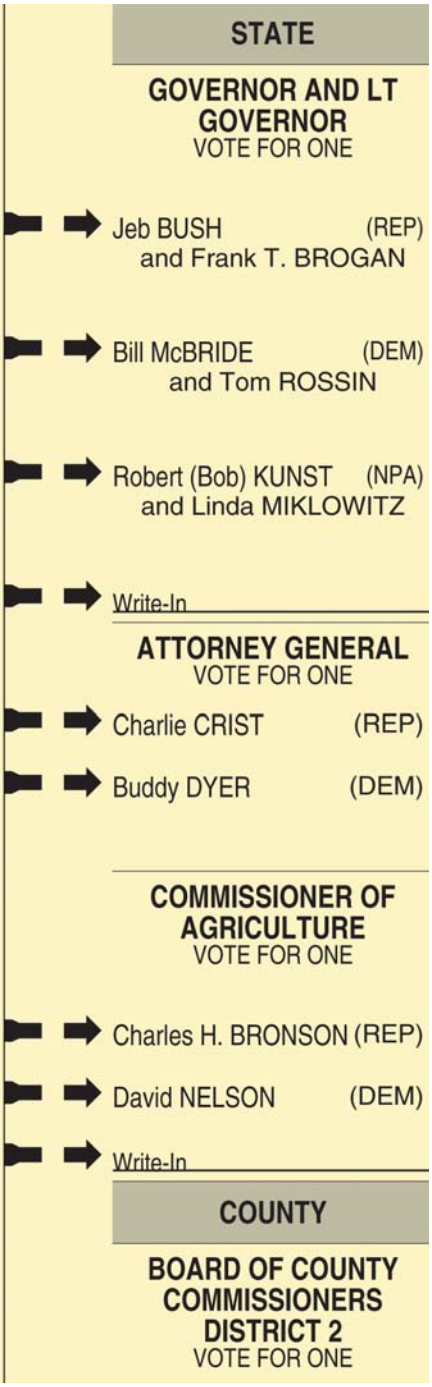
ATTORNEY GENERAL
(Vote for One)

Charlie CRIST	REP	← →
Buddy DYER	DEM	← →

COMMISSIONER OF AGRICULTURE
(Vote for One)

Charles H. BRONSON	REP	← →
David NELSON	DEM	← →
		← →
Write-In Candidate		

Bay County, Florida Ballot



STATE

GOVERNOR AND LT GOVERNOR
VOTE FOR ONE

- Jeb BUSH (REP) and Frank T. BROGAN
- Bill McBRIDE (DEM) and Tom ROSSIN
- Robert (Bob) KUNST (NPA) and Linda MIKLOWITZ
- Write-In

ATTORNEY GENERAL
VOTE FOR ONE

- Charlie CRIST (REP)
- Buddy DYER (DEM)

COMMISSIONER OF AGRICULTURE
VOTE FOR ONE

- Charles H. BRONSON (REP)
- David NELSON (DEM)
- Write-In

COUNTY

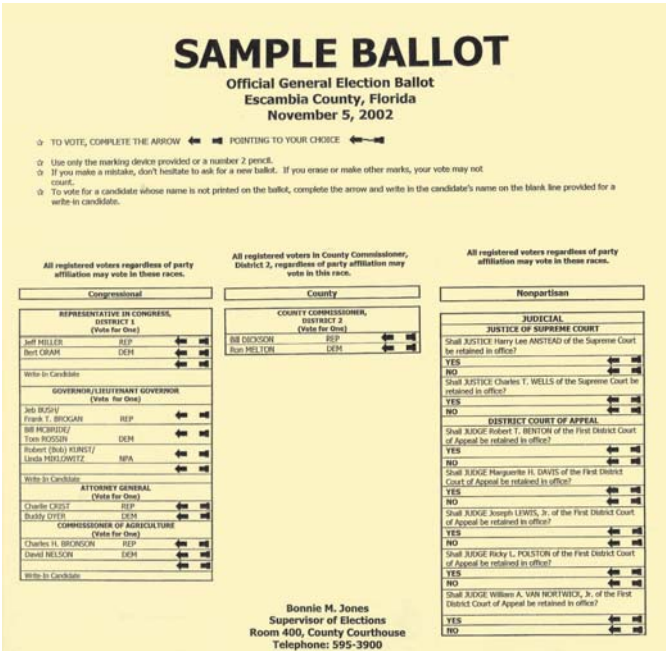
BOARD OF COUNTY COMMISSIONERS DISTRICT 2
VOTE FOR ONE

The problem: Against a plain white background, Escambia County voters likely found it difficult to distinguish between the Congressional, Gubernatorial, Attorney General and Commissioner of Agriculture races. A better ballot design would use shading to distinguish between voting tasks.

The result: Perhaps unsurprisingly, the residual vote rate for certain "unshaded" statewide contests in Escambia County were higher than in nearby Bay County that did use shading to differentiate office types. The residual vote rate for the Attorney General contest in Escambia County was 2.5%, as compared to 2.2% in Bay County. The residual vote rate for the Commissioner of Agriculture contest in Escambia County was 4.6%, as compared to 4.3% in Bay County.

The solution: The improved Escambia County ballot uses different shading to denote different options. The ballot shades office titles and candidates' names differently; this visually separates the various voter tasks. The re-designed ballot also illustrates the recommendation to use the "fill in the oval" response style.

The ballot as it was used:



SAMPLE BALLOT

Official General Election Ballot
Escambia County, Florida
November 5, 2002

☆ TO VOTE, COMPLETE THE ARROW ⬅ ➡ POINTING TO YOUR CHOICE ⬅➡

☆ Use only the marking device provided or a number 2 pencil.
☆ If you make a mistake, don't hesitate to ask for a new ballot. If you erase or make other marks, your vote may not count.
☆ To vote for a candidate whose name is not printed on the ballot, complete the arrow and write in the candidate's name on the blank line provided for a write-in candidate.

All registered voters regardless of party affiliation may vote in these races.

Congressional

REPRESENTATIVE IN CONGRESS, DISTRICT 1 (Vote for One)
Jeff MILLER REP
Bert ORAM DEM
Write-In Candidate

GOVERNOR/LIEUTENANT GOVERNOR (Vote for One)
Jeb BUSH/ Frank T. BROGAN REP
Bill MCBRIDE/ Tom ROSSIN DEM
Robert (Bob) KUNST/ Linda MIKLOWITZ NPA
Write-In Candidate

ATTORNEY GENERAL (Vote for One)
Charlie CRIST REP
Buddy DYER DEM

COMMISSIONER OF AGRICULTURE (Vote for One)
Charles H. BRONSON REP
David NELSON DEM
Write-In Candidate

All registered voters in County Commissioner, District 2, regardless of party affiliation may vote in this race.

County

COUNTY COMMISSIONER, DISTRICT 2 (Vote for One)
Bill DICKSON REP
Ron MELTON DEM

All registered voters regardless of party affiliation may vote in these races.

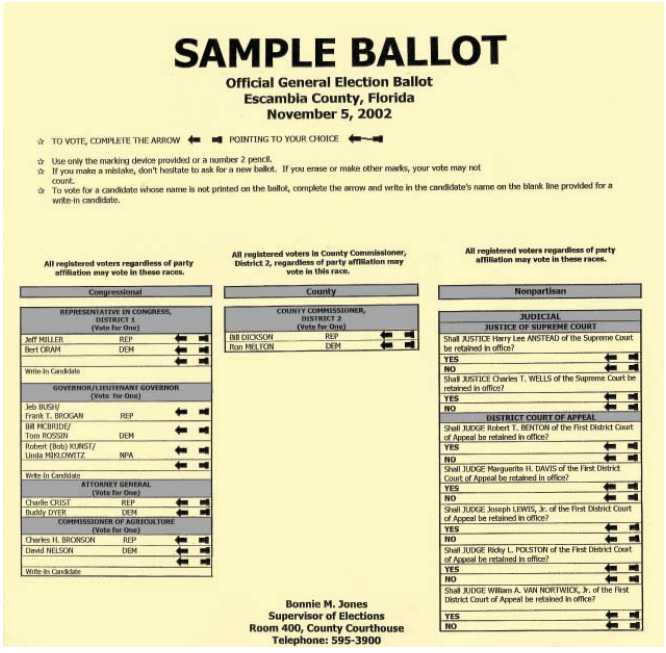
Nonpartisan

JUDICIAL
JUSTICE OF SUPREME COURT
Shall JUSTICE Harry Lee ANSTEAD of the Supreme Court be retained in office? YES NO
Shall JUSTICE Charles T. WELLS of the Supreme Court be retained in office? YES NO

DISTRICT COURT OF APPEAL
Shall JUDGE Robert T. BENTON of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Marguerite H. DAVIS of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Joseph LEWIS, Jr. of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Ricky L. POLSTON of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE William A. VAN NORTWICK, Jr. of the First District Court of Appeal be retained in office? YES NO

Bonnie M. Jones
Supervisor of Elections
Room 400, County Courthouse
Telephone: 595-3900

The ballot with shading added:



SAMPLE BALLOT

Official General Election Ballot
Escambia County, Florida
November 5, 2002

☆ TO VOTE, COMPLETE THE ARROW ⬅ ➡ POINTING TO YOUR CHOICE ⬅➡

☆ Use only the marking device provided or a number 2 pencil.
☆ If you make a mistake, don't hesitate to ask for a new ballot. If you erase or make other marks, your vote may not count.
☆ To vote for a candidate whose name is not printed on the ballot, complete the arrow and write in the candidate's name on the blank line provided for a write-in candidate.

All registered voters regardless of party affiliation may vote in these races.

Congressional

REPRESENTATIVE IN CONGRESS, DISTRICT 1 (Vote for One)
Jeff MILLER REP
Bert ORAM DEM
Write-In Candidate

GOVERNOR/LIEUTENANT GOVERNOR (Vote for One)
Jeb BUSH/ Frank T. BROGAN REP
Bill MCBRIDE/ Tom ROSSIN DEM
Robert (Bob) KUNST/ Linda MIKLOWITZ NPA
Write-In Candidate

ATTORNEY GENERAL (Vote for One)
Charlie CRIST REP
Buddy DYER DEM

COMMISSIONER OF AGRICULTURE (Vote for One)
Charles H. BRONSON REP
David NELSON DEM
Write-In Candidate

All registered voters in County Commissioner, District 2, regardless of party affiliation may vote in this race.

County

COUNTY COMMISSIONER, DISTRICT 2 (Vote for One)
Bill DICKSON REP
Ron MELTON DEM

All registered voters regardless of party affiliation may vote in these races.

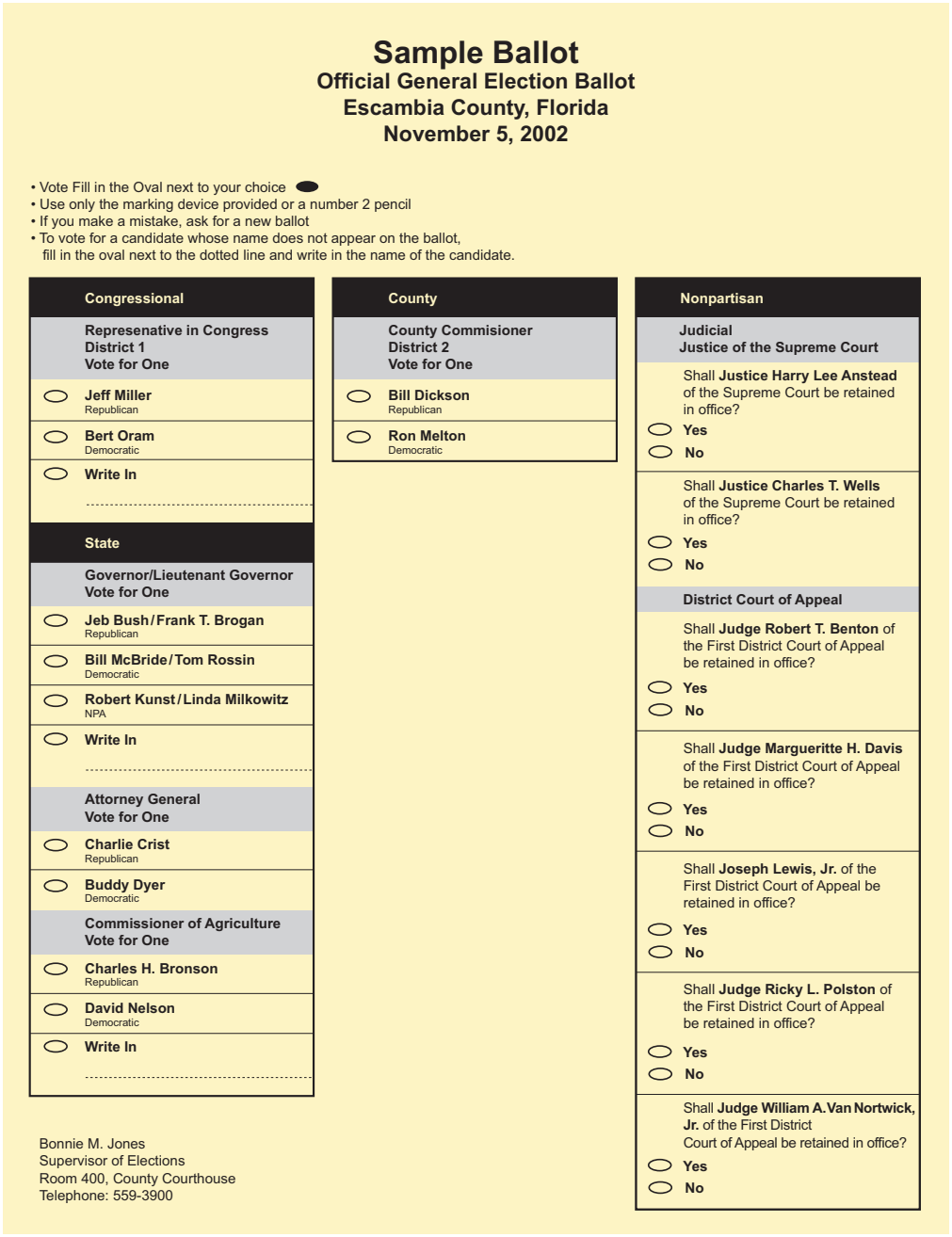
Nonpartisan

JUDICIAL
JUSTICE OF SUPREME COURT
Shall JUSTICE Harry Lee ANSTEAD of the Supreme Court be retained in office? YES NO
Shall JUSTICE Charles T. WELLS of the Supreme Court be retained in office? YES NO

DISTRICT COURT OF APPEAL
Shall JUDGE Robert T. BENTON of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Marguerite H. DAVIS of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Joseph LEWIS, Jr. of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE Ricky L. POLSTON of the First District Court of Appeal be retained in office? YES NO
Shall JUDGE William A. VAN NORTWICK, Jr. of the First District Court of Appeal be retained in office? YES NO

Bonnie M. Jones
Supervisor of Elections
Room 400, County Courthouse
Telephone: 595-3900

Re-designed Ballot:



Sample Ballot

Official General Election Ballot
Escambia County, Florida
November 5, 2002

- Vote Fill in the Oval next to your choice ⬬
- Use only the marking device provided or a number 2 pencil
- If you make a mistake, ask for a new ballot
- To vote for a candidate whose name does not appear on the ballot, fill in the oval next to the dotted line and write in the name of the candidate.

Congressional

Represenative in Congress
District 1
Vote for One

- ⬭ **Jeff Miller** Republican
- ⬭ **Bert Oram** Democratic
- ⬭ **Write In** .....

State

Governor/Lieutenant Governor
Vote for One

- ⬭ **Jeb Bush / Frank T. Brogan** Republican
- ⬭ **Bill McBride / Tom Rossin** Democratic
- ⬭ **Robert Kunst / Linda Milkowitz** NPA
- ⬭ **Write In** .....

Attorney General
Vote for One

- ⬭ **Charlie Crist** Republican
- ⬭ **Buddy Dyer** Democratic

Commissioner of Agriculture
Vote for One

- ⬭ **Charles H. Bronson** Republican
- ⬭ **David Nelson** Democratic
- ⬭ **Write In** .....

Bonnie M. Jones
Supervisor of Elections
Room 400, County Courthouse
Telephone: 559-3900

County

County Commisioner
District 2
Vote for One

- ⬭ **Bill Dickson** Republican
- ⬭ **Ron Melton** Democratic

Nonpartisan

Judicial
Justice of the Supreme Court

Shall **Justice Harry Lee Anstead** of the Supreme Court be retained in office?
- ⬭ **Yes**
- ⬭ **No**

Shall **Justice Charles T. Wells** of the Supreme Court be retained in office?
- ⬭ **Yes**
- ⬭ **No**

District Court of Appeal

Shall **Judge Robert T. Benton** of the First District Court of Appeal be retained in office?
- ⬭ **Yes**
- ⬭ **No**

Shall **Judge Margueritte H. Davis** of the First District Court of Appeal be retained in office?
- ⬭ **Yes**
- ⬭ **No**

Shall **Joseph Lewis, Jr.** of the First District Court of Appeal be retained in office?
- ⬭ **Yes**
- ⬭ **No**

Shall **Judge Ricky L. Polston** of the First District Court of Appeal be retained in office?
- ⬭ **Yes**
- ⬭ **No**

Shall **Judge William A. Van Nortwick, Jr.** of the First District Court of Appeal be retained in office?
- ⬭ **Yes**
- ⬭ **No**

The re-designed ballot includes our recommendation for the use of fill-the-oval instead of complete-the-arrow response method. Not all machines can read ovals.

Problem 8 Not using bold text to help voters differentiate between voting tasks

Ballots should also use bold-faced text to help voters differentiate between office titles and candidate names. A comparison of the 2002 general election ballots used in Franklin and Douglas Counties, Illinois demonstrate the problems that can arise from improper use of bold type.

Example: Use of Bold Text

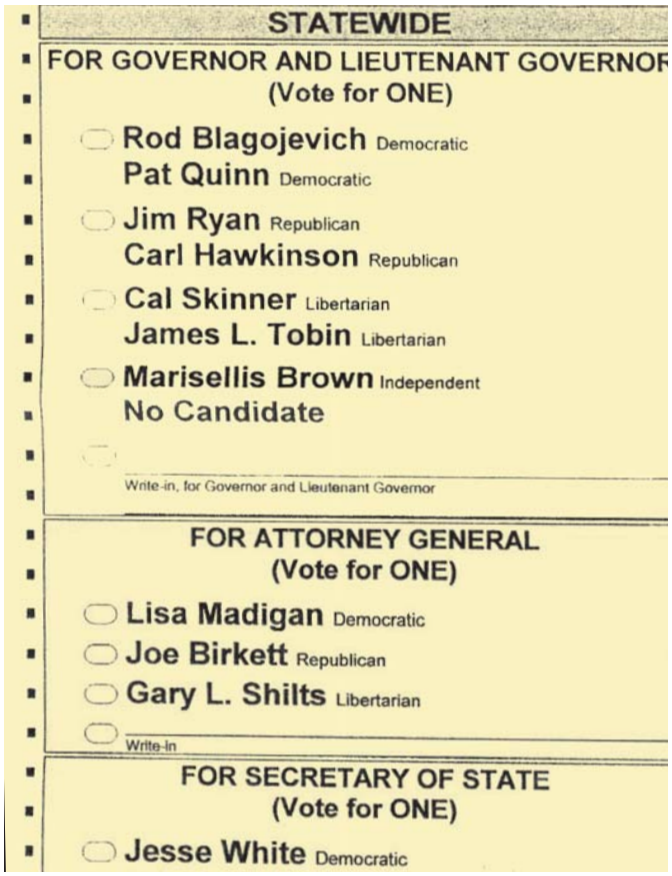
Franklin County, Illinois	Affected Race: Attorney General	
2002 General Election	Residual Vote Rate (in Franklin County)	3.6%
	Residual Vote Rate (in Douglas County)	3.1%
	Affected Race: Secretary of State	
	Residual Vote Rate (in Franklin County)	4.0%
	Residual Vote Rate (in Douglas County)	3.0%

The problem: The Franklin County ballot does a good job of differentiating the different types of races with the use of shading. But it is difficult for voters to differentiate contests within each type. Multiple races are listed below the "Statewide" heading, however, both office titles and candidate names are displayed in bolded text. As with the failure to properly use shading, the lack of variation in text formatting, which in this case, is with the use of boldfaced text, may fail to alert voters of new voting tasks that require their attention.

In contrast, in the same election, Douglas County, Illinois used bold-faced text properly to assist voters in differentiating between office titles and candidate names. The use of shading and bolded text on this ballot provides multiple levels of visual differentiation between voting tasks which helps voters, as they scan the ballot page, to refocus their attention each time that they are presented with a new voting task.

The result: The difference in residual vote rates in these two counties may be instructive. Residual vote rates were generally lower in Douglas County than in Franklin County in 2002 for statewide races. For instance, in the Attorney General contest, the residual vote rate was 3.6% in Franklin County and 3.1% in Douglas County. In the Secretary of State contest, the residual vote rate was 4.0% in Franklin County and 3.0% in Douglas County.

Franklin County, Illinois Ballot



STATEWIDE

FOR GOVERNOR AND LIEUTENANT GOVERNOR
(Vote for ONE)

Rod Blagojevich Democratic
Pat Quinn Democratic

Jim Ryan Republican
Carl Hawkinson Republican

Cal Skinner Libertarian
James L. Tobin Libertarian

Marisellis Brown Independent
No Candidate

Write-in, for Governor and Lieutenant Governor

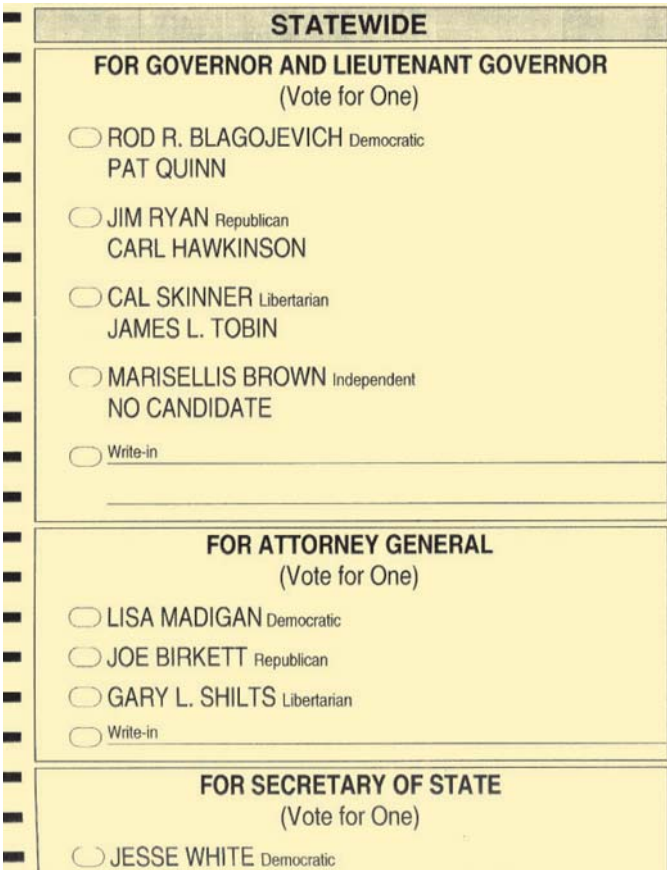
FOR ATTORNEY GENERAL
(Vote for ONE)

Lisa Madigan Democratic
Joe Birkett Republican
Gary L. Shilts Libertarian
Write-in

FOR SECRETARY OF STATE
(Vote for ONE)

Jesse White Democratic

Douglas County, Illinois Ballot



STATEWIDE

FOR GOVERNOR AND LIEUTENANT GOVERNOR
(Vote for One)

ROD R. BLAGOJEVICH Democratic
PAT QUINN

JIM RYAN Republican
CARL HAWKINSON

CAL SKINNER Libertarian
JAMES L. TOBIN

MARISELLIS BROWN Independent
NO CANDIDATE

Write-in

FOR ATTORNEY GENERAL
(Vote for One)

LISA MADIGAN Democratic
JOE BIRKETT Republican
GARY L. SHILTS Libertarian
Write-in

FOR SECRETARY OF STATE
(Vote for One)

JESSE WHITE Democratic

Problem 9 Not writing short, simple instructions

When confronted with a confusing design, voters may turn to instructions for guidance. Carefully worded instructions can help voters discover and correct errors. Poorly written and formatted instructions can cause problems for even the most experienced voters. These voters tend to skip dense instructions, assuming that they know what they are doing, and as a result, may miss changes in instructions from contest to contest.[52]

Good instructions (clearly and simply written, and located in the right place on a ballot) can help voters avoid making mistakes altogether, while poorly written instructions can compound voters' confusion, making it more likely they will not cast their votes as intended.

In order to be useful, instructions must be easy to understand. Unnecessarily complicated language confuses voters. Instructions are best understood if the context is provided before the action, and if they are written in the active voice at a low reading level.

Example: Long, Confusing Instructions

Kansas	Residual Vote Rate (in state)	2.3%
2004 General Election	Residual Vote Rate (nationally)	1.1%
Affected Race: President		

NOTICE

If you tear, deface, or make a mistake and wrongfully mark any ballot
you must return it to the election board and receive a new ballot or set of ballots.

To vote for a person whose name is printed on the ballot darken the oval at the left of the person's name. To vote for a person whose name is not printed on the ballot, write the person's name in the blank space, if any is provided, and darken the oval to the left.

TO VOTE, DARKEN THE OVAL NEXT TO YOUR CHOICE, LIKE THIS:

The problem: The text of these ballot instructions from come from the Kansas Election Code.[53] "Deface" and "wrongfully mark" are needlessly complicated ways of saying "make a mistake." Because they supply more words than necessary, the instructions are spread across multiple lines. The center alignment of the instructions is also problematic. Unlike typical left-aligned text, the longest line of centered text, instead of the line of text listed first, grabs a reader's attention.

The result: Kansas' ballot designs tend to be more confusing than those used in other states.[54] This may explain why Kansas had a higher residual vote rate of 2.3% in the 2004 presidential election — well above the national average of 1.1%. There are many possible explanations for this rate, including an electorate disinclined to vote in the presidential race, or poor poll worker training or voter education. But Kansas officials should not rule out the possibility that these mandated instructions, as well as other legal requirements that violate basic principles of good ballot design (*see* p. 67 for further discussion) may have contributed to the high residual vote rate.

A solution: Good ballot instructions, written at a low reading level, must use commonly understood words to clearly and simply state how voters should make selections on the ballot. They should be left-aligned to ensure that voters easily read them in the correct order. Better instructions might read as follows:

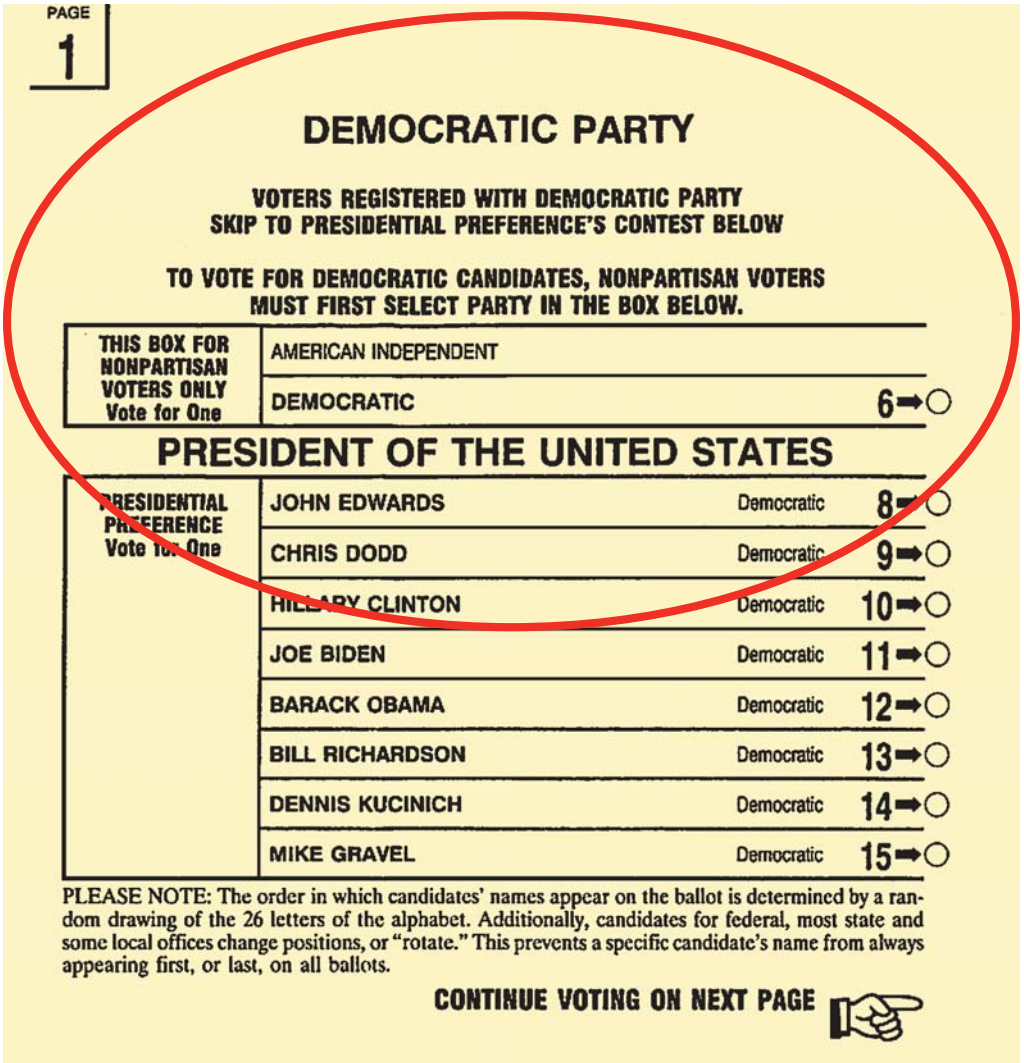
To vote, fill in the oval next to your choice, like this: ⬬
To vote for a person whose name is not on the ballot, write the person's full name in the blank space, and fill in the oval next to it.
If you make a mistake or want to change your vote, ask a poll worker for a new ballot.

Problem 10 Placing instructions far from related actions

David Kimball, Martha Kropf and Janice (Ginny) Redish all suggest that instructions should be placed immediately before the group of contests to which they apply.[55] Kimball specifically recommends that they be at the top of the first column of the first page, rather than across the top of the first page.[56] Redish suggests that instructions be placed near the contests they affect, and in relevant order.[57]

Example: Long, Confusing Instructions

Los Angeles County, California		Residual Vote Rate (in county)	5.3%
2008 Presidential Primary Election		"Lost" Nonpartisan Votes	12,013 votes
Affected Race: President			



PAGE 1

DEMOCRATIC PARTY

VOTERS REGISTERED WITH DEMOCRATIC PARTY
SKIP TO PRESIDENTIAL PREFERENCE'S CONTEST BELOW

TO VOTE FOR DEMOCRATIC CANDIDATES, NONPARTISAN VOTERS MUST FIRST SELECT PARTY IN THE BOX BELOW.

THIS BOX FOR NONPARTISAN VOTERS ONLY Vote for One	AMERICAN INDEPENDENT	
	DEMOCRATIC	6

PRESIDENT OF THE UNITED STATES

PRESIDENTIAL PREFERENCE Vote for One	JOHN EDWARDS	Democratic	8
	CHRIS DODD	Democratic	9
	HILLARY CLINTON	Democratic	10
	JOE BIDEN	Democratic	11
	BARACK OBAMA	Democratic	12
	BILL RICHARDSON	Democratic	13
	DENNIS KUCINICH	Democratic	14
	MIKE GRAVEL	Democratic	15

PLEASE NOTE: The order in which candidates' names appear on the ballot is determined by a random drawing of the 26 letters of the alphabet. Additionally, candidates for federal, most state and some local offices change positions, or "rotate." This prevents a specific candidate's name from always appearing first, or last, on all ballots.

CONTINUE VOTING ON NEXT PAGE

The problem: On February 5, 2008, "decline-to-state" or nonpartisan voters,[58] in Los Angeles County, California who went to polling places to vote in the Democratic or American Independent presidential primaries (as they were entitled to do), were confronted with an inherently confusing voting process that defied common sense.[59] Voters told poll workers which primary they wanted to vote in, were handed a nonpartisan ballot and directed to voting booths with voting devices that contained the contests for the party primary they selected to participate in. However, these voters still had to fill out an oval indicating their party choice before voting in partisan contests. If they failed to fill in that oval, votes cast for party contests would not count, despite the fact that these voters had already stated what party primary they were participating in. Only nonpartisan contests would be read by the County's ballot card readers. Not surprisingly, many voters did not understand this and their votes in the presidential primary contest were lost.

In Los Angeles County, the ballots used for all of the party primaries consisted of just numbered spaces — no candidate names or ballot questions appeared directly on the ballot. Contest and candidate names appear separately on a vote recorder, that the voter inserts the ballot into. In Los Angeles, Democratic candidates, rotating in position by State Assembly District, were assigned to bubbles #8-15; American Independent candidates, also rotating, were assigned to bubbles #8-10. So bubbles #8-10 on nonpartisan ballots could been votes for either party. To tell one from the other, voters were supposed to fill in a *different* bubble — bubble #5 or 6 — with their party choice.

This is an unusual step in the voting process. Not surprisingly, many voters would have been baffled even with clear and well-placed written instructions. But there should be little doubt that the configuration of the ballot instructions made it far less likely that nonpartisan voters would understand the importance of filling in the oval indicating their party choice.

VOTERS REGISTERED WITH DEMOCRATIC PARTY
SKIP TO PRESIDENTIAL PREFERENCE'S CONTEST BELOW

TO VOTE FOR DEMOCRATIC CANDIDATES, NONPARTISAN VOTERS
MUST FIRST SELECT PARTY IN THE BOX BELOW

While the Los Angeles County ballot did list instructions for nonpartisan voters at the top of the ballot immediately above the #5 and #6 bubbles, it failed our ballot instruction guidelines in two ways. First, the instructions were not listed in an order that corresponded with the order of the voting tasks — filling in the party bubble, followed by making a selection in the presidential preference race. The relevant instructions for the first voting task — fill in the party bubble — were listed second. The first instruction on the ballot instead says,

"Voters registered with the Democratic Party, skip to presidential preference's (SIC) contest below."

No doubt, many nonpartisan voters simply followed this first instruction. By placing an instruction relevant to the second task above the first task, officials probably confused some voters. Many nonpartisan voters probably read the first instruction telling voters to skip ahead to the second box, and did so, especially if they did not understand the importance of being registered with a party.

The second instruction, relates to the first task. It says:

"To vote for Democratic candidates, nonpartisan voters must first select party in the box below."

It would have been better and clearer to reverse the order of the two instructions, or to present only one instruction, relevant to the first box:

"Voters not registered with a political party must fill in bubble #5 or #6."

The result: Officials in Los Angeles County appeared to be aware that this ballot and set of instructions could confuse voters. Los Angeles officials made significant efforts to instruct poll workers to make nonpartisan voters aware of the additional bubble to fill, and aired radio public service announcements the day before and day of the election.[60] But, despite these efforts, of the total 226,081 nonpartisan ballots cast in Los Angeles County, 60,458 did not have bubble #5 or 6 filled out, but did have votes for partisan contests, leaving election officials without a voter statement of *which primary these voters were participating in*.[61] 48,525 of these ballots were counted in supplemental ballot counts based on criteria established by county election officials, however 12,013 partisan contest votes on nonpartisan ballots ultimately could not be counted and were excluded from the official certification of election results.[62]

The extraordinary effort by Los Angeles County election officials to discern the voter intent of 80% of the mismarked ballots is commendable. However, these problems could have been avoided if the instructions were better. In total, 5.3% of the votes cast by non-partisan voters were not counted — not because voters over- or undervoted, but because they did not follow fairly confusing instructions and their choice could not be determined from the ballots they cast.

Learning from this lesson, Los Angeles County election officials have revamped the voting process for nonpartisan voters in party primaries. With readability and usability in mind, Los Angeles officials redesigned the process by adding two nonpartisan ballots for voters who wish to vote in party primaries. The ballots have been pre-marked to identify the party, no longer requiring the voter to make the mark themselves. Additionally, Los Angeles worked with community organizations and representatives of the local political parties to redraft the instructions to voters, in order to ensure instructions were clearer and more readable.[63]

Example: Instructions on a Separate Paper From the Official Ballot

Cuyahoga County, Ohio	Residual Vote Rate (absentee, in county)	3.3%
2004 General Election	Residual Vote Rate (in-precinct, in county)	1.7%
Absentee Ballots	Margin of Victory (in state)	2.1%
Affected Race: President		

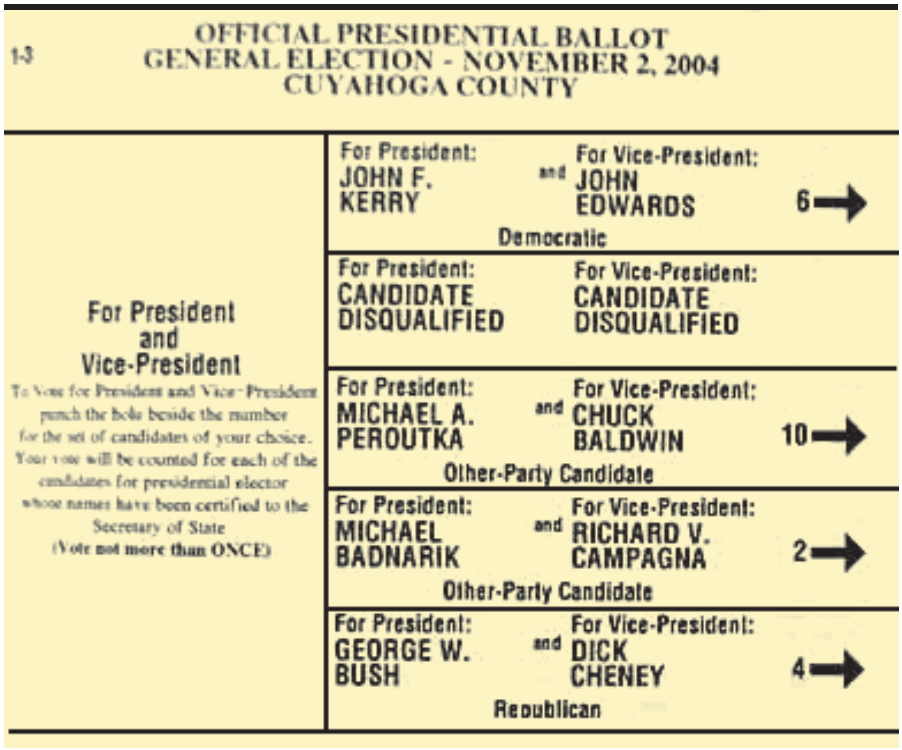
Another example of problems that can result when instructions and actions are separated can be found in the absentee ballots used by Cuyahoga County, Ohio in 2004.

The problem: In this case, more than 75,000 voters were presented with instructions and candidates in a booklet separate from a paper ballot containing just numbers and spaces.[64] Candidates' names were assigned corresponding numbers that voters were supposed to find and punch out on the ballot. The ballot book's instructions state:

> To Vote for President and Vice-President,
> punch the hole beside the number
> for the set of candidates of your choice.
> Your vote will be counted for each of the
> candidates for presidential elector
> whose names have been certified to the
> Secretary of State.
> **(Vote not more than ONCE)**

Although instructions directed voters to make selections based on the numbers, many absentee voters were misled by arrows mistakenly printed in the booklet that suggested that voters should line their punch-card ballots with the candidates' names and make selections based on them instead of the numbers.[65]

Absentee Ballot Page



1-3

OFFICIAL PRESIDENTIAL BALLOT
GENERAL ELECTION - NOVEMBER 2, 2004
CUYAHOGA COUNTY

For President and Vice-President

To Vote for President and Vice-President punch the hole beside the number for the set of candidates of your choice. Your vote will be counted for each of the candidates for presidential elector whose names have been certified to the Secretary of State

(Vote not more than ONCE)

For President: JOHN F. KERRY and For Vice-President: JOHN EDWARDS — 6
Democratic

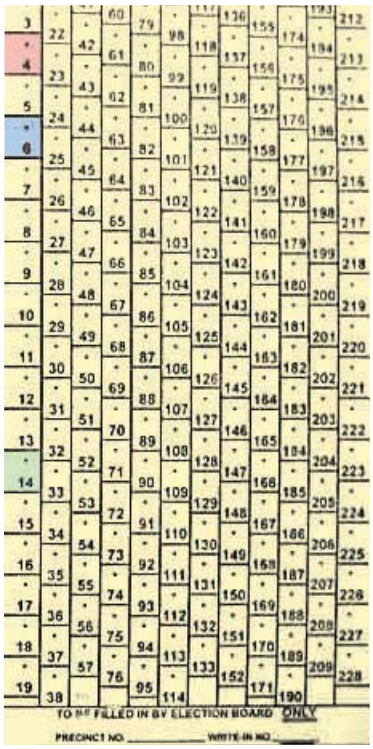
For President: CANDIDATE DISQUALIFIED For Vice-President: CANDIDATE DISQUALIFIED

For President: MICHAEL A. PEROUTKA and For Vice-President: CHUCK BALDWIN — 10
Other-Party Candidate

For President: MICHAEL BADNARIK and For Vice-President: RICHARD V. CAMPAGNA — 2
Other-Party Candidate

For President: GEORGE W. BUSH and For Vice-President: DICK CHENEY — 4
Republican

Absentee Punch-Card Ballot



TO BE FILLED IN BY ELECTION BOARD ONLY

PRECINCT NO. _____ WRITE-IN NO. _____

The result: There was an unusually high residual vote rate for the presidential contest — 3.3% of all absentee votes in the county (or close to 3,000 votes) as opposed to a 1.7% residual vote rate for in-precinct voters in the county (in-precinct voters were not given this confusing ballot). The margin of victory between George Bush and John Kerry in Ohio in 2004 was just 2.1%; it is not difficult to imagine the firestorm that might have resulted in Ohio if the confusing absentee ballot used in Cuyahoga County were used statewide, and the residual vote rate exceeded the margin of victory between the two Presidential candidates.

Problem 11 Not informing voters how to correct paper ballots

The Help America Vote Act requires all voting equipment to "provide the voter with the opportunity . . . to change the ballot or correct any error before the ballot is cast and counted."[66] Unfortunately, ballot design and instructions can make it difficult for voters to correct errors, and thus discourage them from correcting mistakes.

It is easy for paper ballots to become "spoiled" in ways that make it difficult to record a voter's intended choices. A voter might accidentally select the wrong candidate, a stray mark from the pen might graze the wrong candidate's name, or the paper itself might tear. When ballots do not have these instructions, the results can be unusually high residual vote rates.

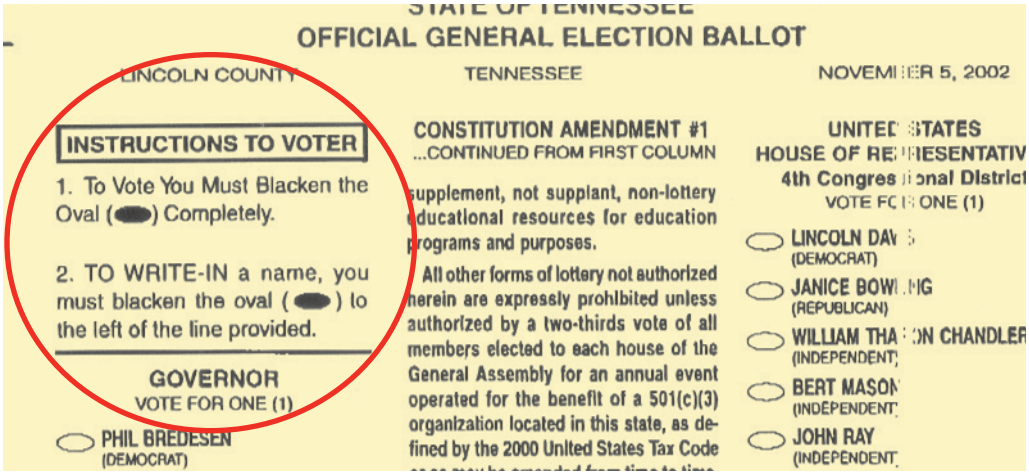
Example: No Instructions for How to Correct a Mistake

Lincoln County, Tennessee	Residual Vote Rate (in county)	3.9%
2002 General Election	Residual Vote Rate (in state)	3.0%
Affected Race: U.S. Senate		

The problem: The ballots in Lincoln County, Tennessee did not have any instructions about how to correct a ballot.

The result: The residual vote rate for the U.S. Senate race in Lincoln County was 3.9%. That compares to a rate of 3.0% statewide.

The solution: Ballot instructions must warn voters about the consequences of a spoiled ballot. Instructions in simple, clear language, in the upper left-hand corner of the ballot should inform voters of what to do when a ballot is spoiled. Such instruction might say, "If you make a mistake or want to change your vote, ask a poll worker for a new ballot."



STATE OF TENNESSEE

OFFICIAL GENERAL ELECTION BALLOT

LINCOLN COUNTY TENNESSEE NOVEMBER 5, 2002

INSTRUCTIONS TO VOTER

1. To Vote You Must Blacken the Oval (●) Completely.

2. TO WRITE-IN a name, you must blacken the oval (●) to the left of the line provided.

GOVERNOR
VOTE FOR ONE (1)

○ PHIL BREDESEN
(DEMOCRAT)

CONSTITUTION AMENDMENT #1
...CONTINUED FROM FIRST COLUMN

supplement, not supplant, non-lottery educational resources for education programs and purposes.

All other forms of lottery not authorized herein are expressly prohibited unless authorized by a two-thirds vote of all members elected to each house of the General Assembly for an annual event operated for the benefit of a 501(c)(3) organization located in this state, as defined by the 2000 United States Tax Code

UNITED STATES HOUSE OF REPRESENTATIVE
4th Congressional District
VOTE FOR ONE (1)

○ LINCOLN DAVIS
(DEMOCRAT)

○ JANICE BOWLING
(REPUBLICAN)

○ WILLIAM THAD CHANDLER
(INDEPENDENT)

○ BERT MASON
(INDEPENDENT)

○ JOHN RAY
(INDEPENDENT)

Problem 12 Failing to effectively warn voters of undervotes in touch screen systems

When DREs produce high undervote rates (as in Sarasota County, Florida's Congressional district race in 2006), an obvious question is why more voters didn't notice when they reviewed a "summary screen" after they'd made their selections that their votes for a particular race had not been recorded. Summary screens allow voters to review the selections the machine has recorded, as well as contests where no vote has been recorded, and provide voters with an opportunity to change their selections (or in the case of undervotes, cast votes in races they may have accidentally skipped) before casting the ballot.

There has been limited research on vote verification systems and how to make summary screens more usable. But the area is ripe for further research. Even without much study, it is obvious to usability experts who have studied DREs that summary screens on most DREs could be improved. The summary screen for ballots in Sarasota County in 2006 supplies examples of standard review screen flaws.

Example: Poor Summary Screen Instructions

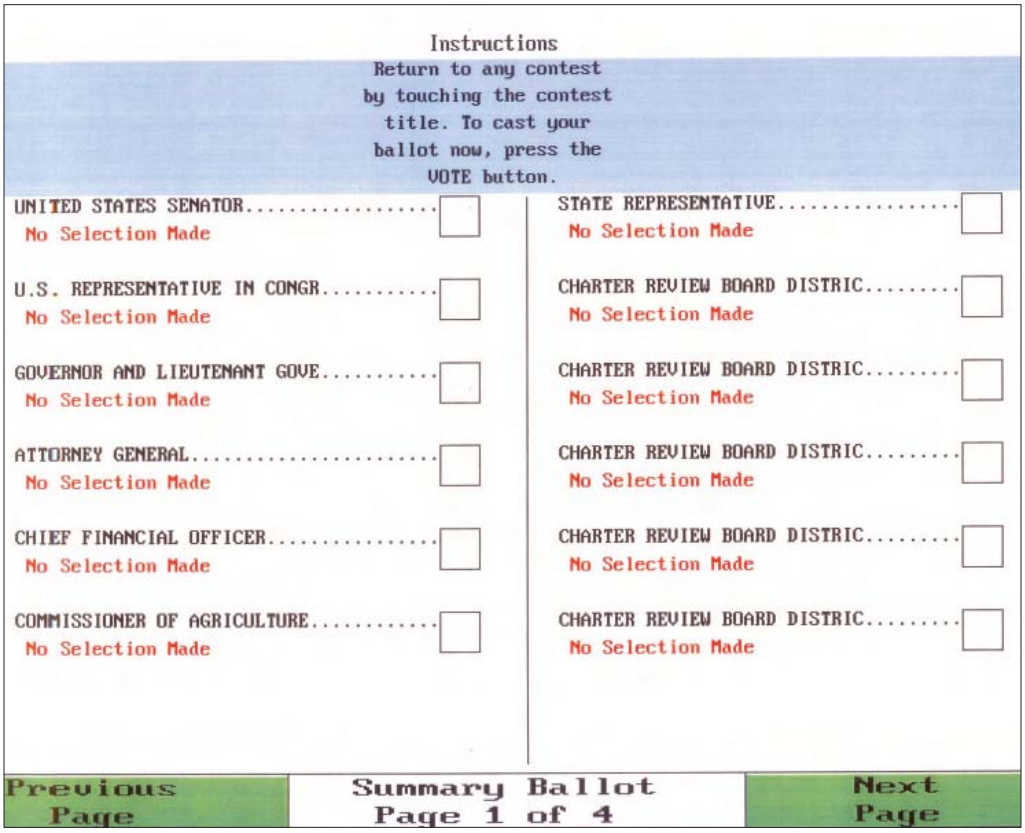
Instructions
Return to any contest
by touching the contest title. To cast your
ballot now, press the
VOTE button.

The problem: It is unclear what this page is, or what voters are supposed to do once they reach this page. This screen violates many of the basic usability principles of electronic ballot design discussed in the example checklist in this report. The instructions are not clear and simple; they use the passive rather than the active voice; single instructions sprawl over many lines, while two different instructions share the same line; and the instructions are center-aligned rather than left-aligned on the page.

The solution: A simple instruction explaining what voters are to do once they reach this page would be enormously helpful. A better set of instructions would be:

Review your ballot selections carefully.
To change a selection, touch the contest title.
To cast your ballot, press the VOTE button.

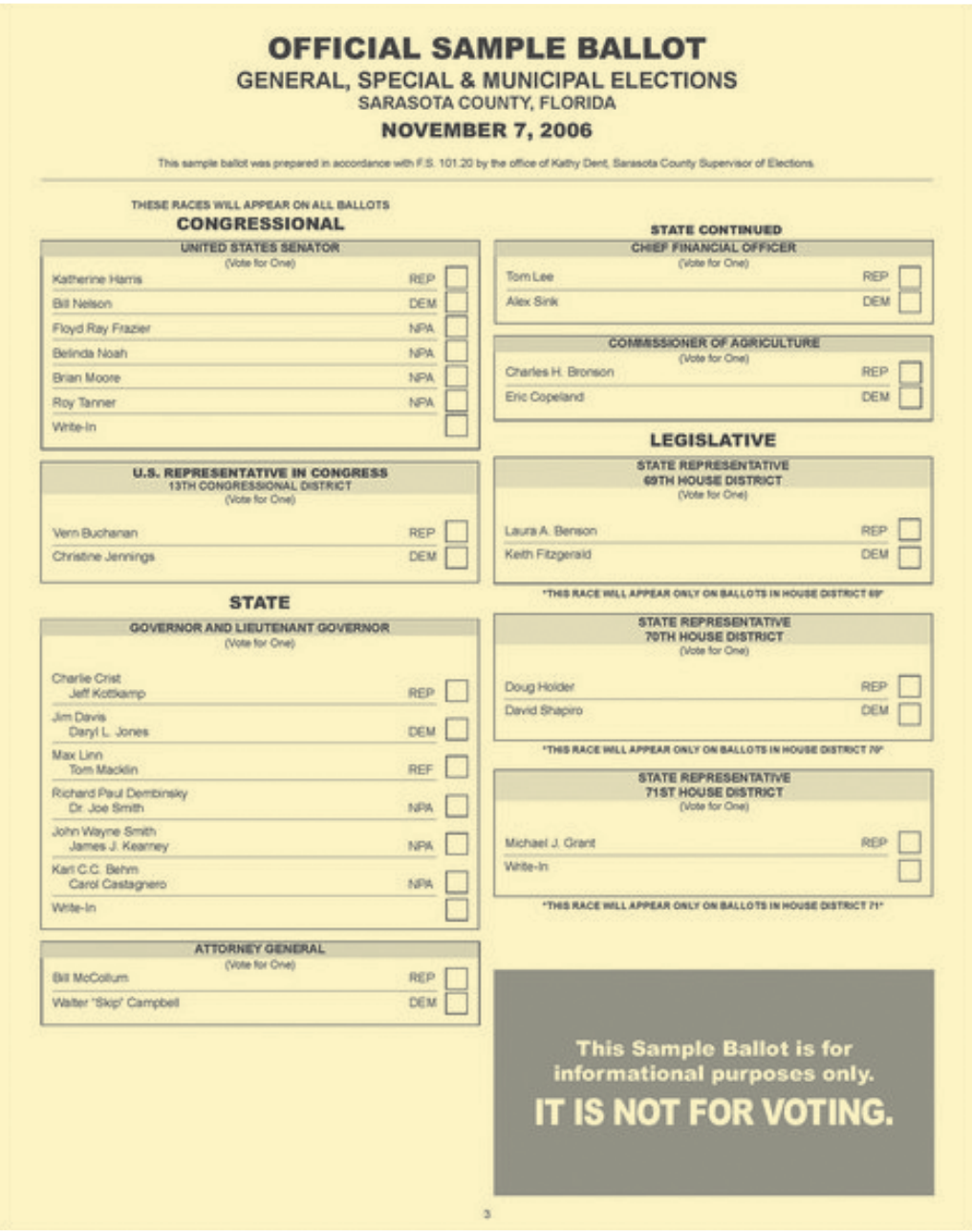
Sarasota County, Florida 2006 Summary Ballot Screen



Problem 13 Publishing sample ballots different from actual ballots

Sample ballots serve as a type of voting instruction by allowing voters to familiarize themselves with the layout of contests and candidates and different voting tasks. As such, they should look like the ballots that voters will use on Election Day.

2006 Sarasota County Sample Ballot



OFFICIAL SAMPLE BALLOT

GENERAL, SPECIAL & MUNICIPAL ELECTIONS

SARASOTA COUNTY, FLORIDA

NOVEMBER 7, 2006

This sample ballot was prepared in accordance with F.S. 101.20 by the office of Kathy Dent, Sarasota County Supervisor of Elections

THESE RACES WILL APPEAR ON ALL BALLOTS

CONGRESSIONAL

UNITED STATES SENATOR (Vote for One)

Katherine Harris	REP
Bill Nelson	DEM
Floyd Ray Frazier	NPA
Belinda Noah	NPA
Brian Moore	NPA
Roy Tanner	NPA
Write-In	

U.S. REPRESENTATIVE IN CONGRESS
13TH CONGRESSIONAL DISTRICT (Vote for One)

Vern Buchanan	REP
Christine Jennings	DEM

STATE

GOVERNOR AND LIEUTENANT GOVERNOR (Vote for One)

Charlie Crist Jeff Kottkamp	REP
Jim Davis Daryl L. Jones	DEM
Max Linn Tom Macklin	REF
Richard Paul Dembinsky Dr. Joe Smith	NPA
John Wayne Smith James J. Kearney	NPA
Karl C.C. Behm Carol Castagnero	NPA
Write-In	

ATTORNEY GENERAL (Vote for One)

Bill McCollum	REP
Walter "Skip" Campbell	DEM

STATE CONTINUED

CHIEF FINANCIAL OFFICER (Vote for One)

Tom Lee	REP
Alex Sink	DEM

COMMISSIONER OF AGRICULTURE (Vote for One)

Charles H. Bronson	REP
Eric Copeland	DEM

LEGISLATIVE

STATE REPRESENTATIVE
69TH HOUSE DISTRICT (Vote for One)

Laura A. Benson	REP
Keith Fitzgerald	DEM

*THIS RACE WILL APPEAR ONLY ON BALLOTS IN HOUSE DISTRICT 69

STATE REPRESENTATIVE
70TH HOUSE DISTRICT (Vote for One)

Doug Holder	REP
David Shapiro	DEM

*THIS RACE WILL APPEAR ONLY ON BALLOTS IN HOUSE DISTRICT 70

STATE REPRESENTATIVE
71ST HOUSE DISTRICT (Vote for One)

Michael J. Grant	REP
Write-In	

*THIS RACE WILL APPEAR ONLY ON BALLOTS IN HOUSE DISTRICT 71

This Sample Ballot is for informational purposes only.

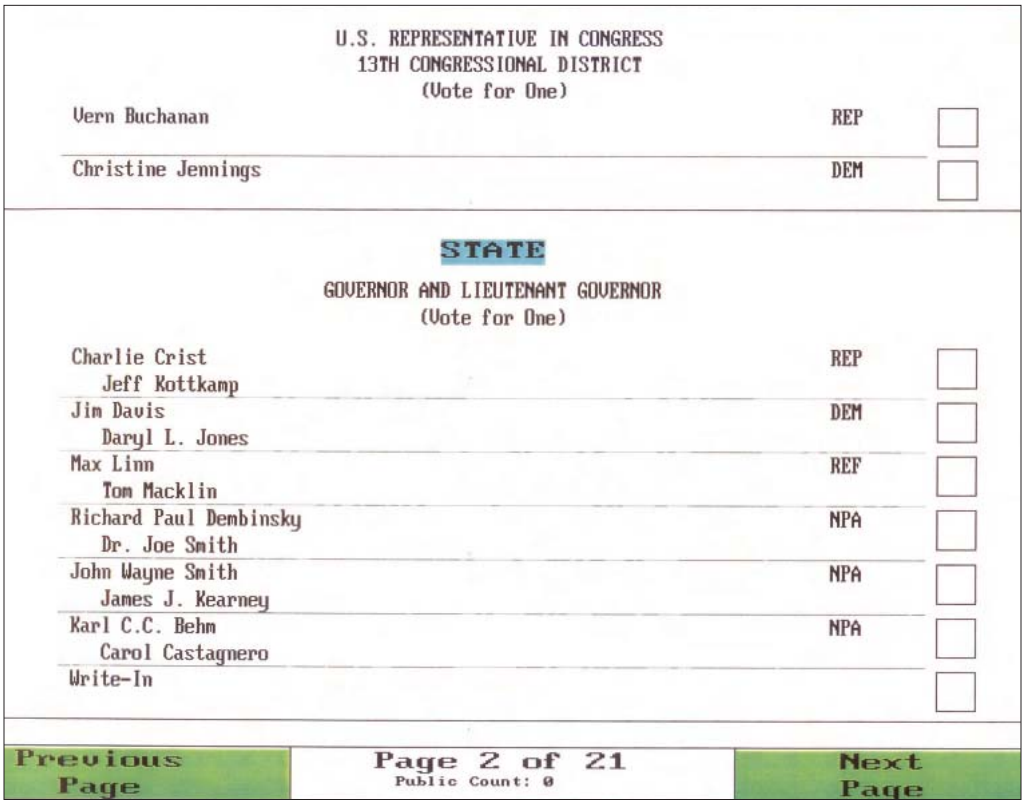
IT IS NOT FOR VOTING.

3

One of the factors that may have contributed to problems in Sarasota County, Florida in 2006 is that sample ballot that voters saw before the election looked very different from the confusing ballot used on Election Day. With no way to review the real ballot in advance, almost all voters saw the confusing Sarasota ballot layout for the first time when they were in the voting booth.

Had the county widely distributed sample ballots that looked like the actual ballots voters would see on Election Day, there are several reasons to believe that the residual vote rate might have been lower. Among them: civic groups and concerned citizens may have noticed the problems with the ballot and insisted on a redesign or reprogramming of the electronic ballot; even if it was too late to change the electronic ballot, these groups could have spent the weeks leading up to the election warning voters of the potentially confusing design; and, finally, voters themselves would have had an opportunity to familiarize themselves with this unusual design.

2006 Sarasota Election Day Ballot



Laws that Interfere with Good Design and Usability

State laws and regulations, often drafted by lawyers and others with little familiarity with basic usability principles, are frequently written in ways that discourage good ballot design. In fact, such laws often mandate designs that make it far more difficult for voters to accurately cast votes for their choices. We encourage states to use this report and work with usability experts to determine which current laws and regulations in their states may prevent counties from designing the most usable ballots. Illinois did this in 2001; at the encouragement of usability experts, the State Legislature revoked its requirement for the use of capital letters in ballots.[69]

More generally, overly prescriptive laws, as opposed to laws that set minimum goals and provide for the creation of administrative rules to reach those goals, can lock in bad ballot designs in a way that cannot be corrected without difficult-to-obtain legislative action. It is our consensus that election codes should mandate layout rules, as well as standard and simple voting instructions for each voting system model. In addition, such codes should set out general requirements for visual acuity needed to read the ballot and for the reading level of the words used in instructions (i.e., "using simple English words no higher than a third grade reading level").[70] But the code should direct the chief state elections office to adopt administrative rules to carry out these laws.

Of the states we reviewed, three stood out as having the kind of laws that typically impede good ballot design: New York, Ohio, and Kansas.

A. New York

New York State's election code and regulations violate more basic usability principles than any other state we examined. As New York makes its transition from lever machines to optical scan systems,[71] the problems caused by such requirements are likely to become more apparent. Among the violations are the following:

- **Requirements for full-face paper ballot.** The New York State Board of Elections has found the state's election code requires a full-face ballot display for all ballots, except that "proposals may appear on the reverse side of any [paper] ballot."[72] Several usability experts have convincingly argued that requiring a full-face ballot design listing every candidate and contest on a single screen or piece of paper is likely to cause voter confusion and higher voter error rates because voters are presented with too much information at once.[73] More specifically, the full-face requirement for paper ballots in New York is particularly problematic in light of the fact that such ballots often contain several candidates and parties listed for each office, and because there are additional requirements to list additional information next to each candidate's name, including party emblems. The result is, all too often, a crowded, difficult-to-read ballot encourages mistakes.

- **Requirement to include party name and emblem in each box.** While a full-face ballot is likely to place all candidates of a single party in a single row or column (with a title that will state "Democrat," "Republican," or other party name), New York law additionally requires each candidate's name to be surrounded by both party emblem and party name (again).[74] In such cases, little if any additional information is provided to voters, but each candidate's name will become surrounded by so much information that the ballot itself is likely to be more difficult to read.

- **Requirements for capital letters.** New York's election code states, "the names of candidates shall be printed in capital letters."[75] This violates the basic usability principle of avoiding setting text in all capital letters.

- **Complex instructions.** Like many other ballot instructions mandated by law, instructions drafted for New York's paper ballots rely heavily on legal and election-related jargon, and do not seem to have been drafted to ensure that low-literacy individuals will be able to understand them. Worse still, the law permits the placement of instructions on the "edge" of the ballot, rather than mandating that instructions appear in the upper left-hand corner of the ballot. The mandated instructions for paper ballots state in relevant part:

Original

1 Mark only with a pen having blue or black ink or with a pencil having black lead.

2 To vote for a candidate whose name is printed on this ballot make a single cross X mark or a check V mark in one of the squares to the right of an emblem opposite his or her name.

3 To vote for a person whose name is not printed on this ballot write or stamp his or her name on a blank line under the names of the candidates for that office.

4 To vote yes or no on a proposal make a single X or V mark in the square opposite your vote.

5 Any other mark or writing, or any erasure made on this ballot outside the voting squares or blank spaces provided for voting will void this entire ballot.

6 Do not overvote. If you select a greater number of candidates than there are vacancies to be filled, your ballot will be void for that public office or party position.

7 If you tear, or deface, or wrongly mark this ballot, return it and obtain another. Do not attempt to correct mistakes on the ballot by making erasures or cross outs. Erasures or cross outs may invalidate all or part of your ballot. Prior to submitting your ballot, if you make a mistake in completing the ballot or wish to change your ballot choices, you may obtain and complete a new ballot. You have a right to a replacement ballot upon return of the original ballot.

These instructions violate a number of rules provided in our sample checklist. They are negative, repetitive, unnecessarily long, and use needlessly complex words and election jargon. Simpler, plainer, and positive instructions could be written as follows:

Rewritten

1 To vote, use the pen or pencil provided to completely fill in the square next to your choice, like this: ■

2 To vote for a person whose name is not on the ballot, write the full name in the Write-in area at the bottom of the column for that office.

3 Vote only for the maximum number of candidates for each office. The number of candidates you can vote for in each office is listed at the top of the column for that office.

4 If you make a mistake or if you want to change your vote, ask a poll worker for a new ballot.

B. Ohio

Ohio's election code appears to conflict with at least three basic usability principles detailed in our sample checklist; however, as discussed below, the Secretary of State may override some of the provisions that conflict with good ballot design.

- **Requirement that candidate names appear in all capital letters.**[76] Writing text in ALL CAPITAL LETTERS is usually intended to give that text more visual weight on the page, making each of the letters larger. When printing technologies did not allow the use of different typefaces (for example, varying the size or weight of the text), this may have been helpful. Today, it is no longer necessary. There are two problems with the use of all capital letters. First, and most importantly, most text encountered in day-to-day life is written with both capital and lower-case letters. We are used to reading mixed-case text, so it is more familiar. The second problem is that when text is written in upper-case, all of the letters are the same size, so we lose the natural variations in the overall shape of the words. The problems connected with all upper-case formatting have been studied and recognized for decades.[77] The Ohio Election Code provides that the Secretary of State may modify requirements related to case type for both candidate names and office titles.[78]

- **Requirement that certain text (and in particular, certain contest names) be centered, rather than flush-left**.[79] Centering of text, particularly contest names, can be confusing for voters, especially those with visual and reading disabilities who would benefit from a clear starting point that flush-left text provides. Although the Ohio Election Code provides that certain text be centered, it also appears to allow the Secretary of State to modify this requirement and allow for all text on the ballot to be flush-left.[80]

- **Complex instructions for only one race.** The Ohio code mandates detailed and confusing instructions for the presidential race,[81] while providing different instructions for other contests and non-presidential ballots.[82] The mandated instruction for the presidential race is as follows:

  Below "Official Presidential Ballot" shall be printed a heavy line centered between the side edges of the ballot. Below the line shall be printed "Instruction to Voters" centered between the side edges of the ballot, and below those words shall be printed the following instructions:

Original

1 To vote for the candidates for president and vice-president whose names are printed below, record your vote in the manner provided next to the names of such candidates. That recording of the vote will be counted as a vote for each of the candidates for presidential elector whose names have been certified to the secretary of state and who are members of the same political party as the nominees for president and vice-president. A recording of the vote for independent candidates for president and vice-president shall be counted as a vote for the presidential electors filed by such candidates with the secretary of state.

2 To vote for candidates for president and vice-president in the blank space below, record your vote in the manner provided and write the names of your choice for president and vice-president under the respective headings provided for those offices. Such write-in will be counted as a vote for the candidates' presidential electors whose names have been properly certified to the secretary of state.

3 If you tear, soil, deface, or erroneously mark this ballot, return it to the precinct election officers or, if you cannot return it, notify the precinct election officers, and obtain another ballot.

These instructions are long, needlessly complex sentences, that collect too many ideas into one paragraph. They also contain legal language such as "electors" and "recording a vote" which may not be meaningful to voters. The instructions explain that when you vote for president and vice president, you are really voting for a "presidential elector" (representative to the Electoral College).

Better instructions would be:

Rewritten

1 To Vote for President and Vice-President, mark your choice next to their names.

2 If you vote for candidates who are listed with a political party, your vote will be counted as a vote for the presidential electors from that party.

3 If you vote for candidates who are listed as independents, your vote will be counted as a vote for the presidential electors supporting those independent candidates.

4 If you make a mistake or want to change your vote, ask a poll worker for a new ballot.

By contrast, Ohio law mandates only the following related instructions for other races and ballots:

Original

The board of elections shall cause to be printed in English in twelve point type on paper or cardboard instructions as issued by the secretary of state for the guidance of electors in marking their ballots. Such instructions shall inform the voters as to how to prepare the ballots for voting, how to obtain a new ballot in case of accidentally spoiling one, and, in a smaller type, a summary of the important sections of the penal law relating to crimes against the elective franchise. The precinct election officials shall cause to be posted immediately in front of or on the polling place and in each voting shelf one or more of such cards of instructions.

The result of vague statewide rules about ballot instructions for certain races could lead to very different instructions in each county, even where counties are using the same equipment, and that is likely to lead to significant differences in whether a voter's vote will be counted from one county to the next. It would be better to use simple and clear instructions for all ballots and all races. They might mirror the mandated instructions in Ohio for the presidential contest, but apply to all contests, using simpler, plainer and positive language:

Rewritten

To vote, mark your choice next to the candidate's name.

If you make a mistake or want to change your vote, ask a poll worker for a new ballot.

C. Kansas

As already discussed in Problem 9, the election code in Kansas supplies language for instructions that is long and confusing. In addition to these problematic laws, Kansas's election code also has requirements that create clutter around candidates' names. Specifically, Kansas Statutes Section 25-613 requires ballots to list, among other things, the city of residence for each candidate running for statewide office. More clutter will generally make it more difficult for voters, particularly voters with reading disabilities, to distinguish between candidates and contests. As Professor Ted Selker of MIT has noted, roughly 15% of the population has some sort of reading disability, and such people "get really confused easily with disorganization of text." [81]

Policy Recommendations

There are a number of steps states and counties can take to make their ballots as usable as possible. Unless these steps are taken, it is inevitable that large numbers of voters will be disenfranchised as a result of poor ballot design and confusing ballot instructions in November. In the worst case scenario, the number of disenfranchised voters will exceed the margin of victory between the leading candidates in a federal or statewide contest and lead to the kind of recriminations and loss of public faith in election administration that we saw after the 2000 Presidential Election and 2006 race in Florida's Congressional District 13. Unfortunately, our review of state practices, and interviews with election officials in all fifty states, shows that few, if any of these steps are being taken in most jurisdictions today.

There is still adequate time to implement many, if not all, of these measures. But that time is quickly running out.

These recommendations fall into two groups:

- Improve the ballot design and usability process to ensure that ballots capture voter intent accurately
- Improve election laws, regulation and reporting

Improve the ballot design to capture voter intent accurately

Develop a checklist of design best practices for ballot designers

A good checklist can help those responsible for designing ballots ensure that they have not violated any basic usability or information design principles (as all of the problematic ballots in this report did). We provide a starting point for such checklists. These checklists are designed to help election officials and designers create well-organized, easily comprehensible paper and electronic ballots that allow voters to cast their intended votes efficiently and effectively.

We encourage election officials to work with design and usability professionals to tailor these checklists to their jurisdictions, based upon their own experiences and the requirements of their voting systems and their local election laws.

- Several reports from the EAC and others offer more detailed guidance on both ballot layout and writing instructions. We have referred to them throughout the work in preparing this report, but urge election officials to follow their well-researched guidance.
- U.S. Election Assistance Commission, *Effective Designs for the Administration of Federal Elections* (June 2007)
- David Kimball & Martha Kropf, *Ballot Design and Unrecorded Votes on Paper-Based Ballots* 69 Public Opinion Quarterly 505 (2005)

- Janice Redish, *Guidelines for Writing Clear Instructions and Messages for Voters and Poll Workers* (prepared for the National Institute of Standards and Technology) (Feb. 21, 2006)

- *Voluntary Voting System Guidelines Recommendations to the Election Assistance Commission* (prepared at the direction of the Technical Guidelines Development Committee) (Aug. 31, 2007)

- Paul S. Herrnson et al., *Voting Technology: The Not-So-Simple Act of Casting a Ballot* (Brookings Institution Press 2008)

Conduct usability testing: use the LEO test kit to improve ballot design

Using the sample checklist provided in this report and reviewing the examples of bad and good ballot design described above, election officials can avoid making the most common ballot design mistakes. But usability problems can occur, even if you try to follow good design guidelines. Ultimately, the best way to ensure that the voter's intention is accurately recorded is to conduct usability testing on proposed ballots before finalizing their design for use in an election.[82]

Of course, all ballots will eventually receive a usability test — on Election Day. At that point, unfortunately, finding out that a ballot is confusing to voters is most unwelcome news. Our hope is that by testing ballots *before* Election Day, election officials can make adjustments to ballots and avoid the kinds of design problems that result in lost or miscast votes. Usability testing will only have value if election officials make changes to ballots based on the results of *that* testing.

The Brennan Center surveyed the chief election offices and election code of all fifty states. We did not find any state offices that currently conduct usability testing on ballots before Election Day, though several election officials expressed interest in doing so in the future. It is likely that many (if not most) states and counties have not conducted such testing because they believe they do not have the time, money, or personnel needed to do it effectively. And to some extent, they are probably right: unfortunately, for most election offices there will not be sufficient resources to conduct regular, rigorous, scientific testing of ballots before every election.

But a recently developed usability testing kit for local elections officials, called the "LEO Usability Test Kit"[83] should allow states and counties to learn quickly and inexpensively if their ballots have major flaws that are likely to leave the intended choices of many voters uncounted.

The Usability Professionals' Association Voting and Usability Project created this testing kit and suggests using it under the following circumstances:

- When something about the voting situation has changed since the last election, such as new machines, a new ballot layout, the passage of new regulations, or ordinances;

- When officials have a good idea of what is going to be on the ballot for the next election; and

- When some significant event happens that may cause the overall layout of the ballot to change.

The process for testing ballots and making necessary modifications can be found at the Usability Professionals' Association website.[84]

The tests themselves are easy enough that they can be administered by anyone who might serve as a poll worker, and they require only about a dozen or so volunteers to act as voters. These people could be visitors to the election office or people who work nearby (but not in the elections or other government office). The sessions can be held in any central, public place, such as a town hall or city hall, or any place similar to a regular poll site. For elections that are conducted entirely by mail, officials should simulate a home-like set-up, such as a kitchen or living room.

The volunteers should reflect the demographics of the voters in that jurisdiction. For example, if a jurisdiction includes many elderly voters, taking the materials to the neighborhood center where elderly residents congregate would be a good idea. Testing with middle-aged workers would not be representative for that jurisdiction.

Testing must involve not just observing whether or not individuals fill out the ballot correctly, but whether comments or hesitancy while voting indicate that the ballot is more difficult or confusing than it needs to be. In all likelihood, a small group of voters involved in a usability test will mostly be able to work through their confusion and/or correct mistakes on their own. In the context of a full election, however, the problems experienced by the small usability test group are likely to be magnified, and the subtle effects of poor design are more likely to be significant.

If done properly, the entire process of testing should not take more than a few hours, and should provide election officials with greater confidence in their ballot design, or allow them to make changes that will make it more likely that voter intent is accurately recorded.

Actively publicize sample ballots that look like the ballots voters will use at their polling places

States and counties should publicize ballots ahead of an election, by sending them to local party leaders, business leaders, non-profit organizations, civil rights groups, universities, and others. These sample ballots should also be posted on the web and mailed to all registered voters. If sample ballots show the same layout and design as the actual ballots used at the polling place, early publicity will provide voters with an opportunity to become familiar with the ballot, thereby decreasing the likelihood that they will make errors on Election Day. By providing sample ballots to a wide range of groups ahead of time, election officials increase the likelihood that they will be warned of ballot design flaws before Election Day, giving them an opportunity to change the ballot and/or educate voters about potential prob-

lems when they arrive at polling places to vote. Unfortunately, as we saw with the example of Sarasota County in 2006 (discussed in *Ballot Design Problems*), all too often sample ballots sent to voters and advocacy groups do not look like the ballots used on Election Day.

If usability testing or publication of sample ballots identifies problems with ballot design, make necessary changes

In our historical review of poor ballot designs that led to high numbers of lost or miscast votes, we found that recognizing ballot design flaws was not enough to prevent big problems on Election Day. For instance, election officials in Sarasota County in 2006 and Los Angeles County in February 2008 appeared to have known there were problems connected to ballot design and did their best to warn voters of the flaws.[85] In spite of this, thousands of votes were lost. It is preferable to warn voters of design flaws than to ignore them, however, in the best case scenario, counties should conduct usability tests and publish sample ballots early enough so that if problems are discovered, the flawed ballot design and/or instructions can be changed.

Create ballot design guidelines and templates for each brand and model of voting system used

We have reviewed the election code and state practices of all fifty states. Only Florida's Secretary of State has developed detailed ballot design regulations for each brand and model of voting system used in his state.[86] In many states, counties design ballots for elections. Although many states provide general guidance as to the form of ballot instructions and the listing of contests and/or candidate names, they are often not specific enough to ensure that the ballot design mistakes discussed in *Ballot Design Problems* do not occur. The variety of voting systems used necessitates, at a minimum, specific guidelines for each type of voting system (e.g., optical scan, touch screen) or ballot class (e.g., absentee, provisional) to ensure that ballots are as well-designed as possible to minimize voter confusion. We encourage all states to consult with usability experts in designing sample ballots, and to publish templates for counties as well.

Review county ballot designs at the state level

A general principle in both the graphic design and programming communities is that it is extremely difficult for someone who created a design to review it effectively.[87] Mandating state oversight and approval of ballot designs would ensure that a "second set of eyes" in the office of the Secretary of State or other chief election official reviews a sampling of ballots from every county (for instance, one for each type of machine used in each county, or for each class of ballot, i.e., absentee, in-precinct, English and second language, etc.). Ideally, the review would be done by a full-time employee or outside expert who would not be as overburdened with as many other tasks as a county election official is shortly before an election. Connecticut, North Carolina, Tennessee, Virginia, and Wisconsin regularly review locally-designed ballots at the state level before elections.[88] In Ohio, the Secretary of State has asked counties to send in ballots for review if they find they must deviate from that office's ballot template (because, for instance, their particular model of voting system cannot support all aspects of the design detailed in the template).[89]

Improve Election Laws, Regulations, and Reporting

Require counties to publish the number of overvotes, undervotes, and spoiled ballots

Unusually large numbers of overvotes, undervotes, and/or spoiled ballots strongly suggest election administration problems; in particular, high rates of overvotes, undervotes, and spoiled ballots may suggest some ballot design feature confused voters to the point where they were unable to cast their votes as intended. Many states reported collecting little to no information on the number of overvotes, undervotes, and/or spoiled ballots, or collecting it for internal purposes only. We recommend that states require counties to collect this information and to publish it publicly. Florida requires county supervisors of elections to report the number of overvotes and undervotes in the top-of-the-ticket races for every general election, which is published in a public report by the state.[90] This information is not only useful to election officials for examining their ballot designs, but as a public report, concerned citizens and advocates may also participate in the process.

Review and amend election laws that prevent best ballot design

We encourage states to use this report and work with usability experts to determine which current laws and regulations in their states may prevent counties from designing the most usable ballots. Overly prescriptive laws, as opposed to laws that set minimum goals and provide for the creation of administrative rules to reach those goals, can lock in bad ballot designs in a way that cannot be corrected without difficult-to-obtain legislative action. It is our belief that election codes should mandate layout rules, as well as standard and simple voting instructions for each voting system model.

Adopt federal voting system guidelines that ensure future machines will support good ballot design

The federal government should encourage voting equipment manufacturers to support requirements that support good ballot design. Many election officials who want to comply with a checklist such as the one provided in this report will have a hard time doing so because of the limited capacity of their own voting equipment. In reviewing and amending the draft V*oluntary Voting System Guidelines*, the EAC should do more to ensure that all future voting systems can employ good ballot design and usability principles. We could start by requiring vendors to produce systems that satisfy the recommendations in the EAC's own *Effective Designs for the Administration of Federal Elections.*

Put a greater emphasis on ballot design in the EAC's role as a clearinghouse

Part of the mandate of the Election Assistance Commission is to "serve as a national clearinghouse and resource for the compilation of information and review of procedures with respect to the administration of Federal elections."[91] In fulfilling this duty, the EAC could post copies of paper ballots or screenshots of DRE pages from each county on its website. This would allow election officials around the country to see how other states and counties address challenging ballot issues through ballot design.

Directions for the Future

This report addresses steps that jurisdictions can and should take in the short term to improve ballot design and avoid the kinds of mistakes we have seen in nearly every federal election in recent memory. We offer a few suggestions below for further study and approaches that, we hope, will greatly improve ballot design and instructions in the long run.

A. Increased role of federal government

This report shows that ballot design decisions of local and state election officials can have a major impact on federal election results. The federal government has an interest in ensuring that voters are not disenfranchised as a result of confusing ballot design and instructions. In addition to the recommendations already discussed, there are a number of steps that could be taken at the federal level to ensure better ballot design. These include: federal guidelines for ballot design for each model of voting system used in the United States, and funds that would enable states and counties to conduct usability testing of ballots.

B. More cooperation between election officials and usability and other design experts

Ultimately, the best way for counties and states to improve their ballot design and instructions is to work with usability and other design experts. Some jurisdictions have begun to do that. Cook County, Illinois is a prime example of how cooperation between election officials and design and usability experts can lead to better laws and better, more usable ballots. *See generally,* Blair Kamin, *The (Design) Fix Is In; In a Stunning Turnabout, Chicago and Cook County Have Become National Leaders in Election Reform,* Chicago Tribune, Mar. 16, 2004. The Oregon Secretary of State's office has employed a full-time designer to assist with the redesign of all voting materials, and Nebraska has participated in a pilot project testing ballot design that resulted in constructive insight on ballots' usability.[92] We encourage more jurisdictions to adopt this model of cooperation and more participation by usability and design experts at election official conferences.

C. Study of summary ballot screens

DREs and many new precinct count optical scan systems have summary screens that inform voters if they have undervoted in particular contests (and in the case of optical scan systems, that they have overvoted). Unfortunately, there has been little study of what kinds of instructions, layout, and design work best to ensure that voters review summary screens, spot errors, and make corrections when necessary.[93] A better understanding of what works could greatly reduce voter error rates.

D. Design of VVPT output and how to make voters review before they finally cast ballots

Soon after the Help America Vote Act passed, opposition to electronic voting and touch screen machines grew. Many election integrity activists and security experts argued in favor of

voter-verifiable paper trails ("VVPT"), printed by the electronic voting machines that would allow voters to independently verify their vote.[94] More recently, some of these activists and security experts have argued that paper trails do not provide sufficient security, because most voters do not carefully review them (or notice errors, even when they do).[95]

One of the most persistent questions for those who study voting system usability, security and reliability is how to design voter-verifiable paper trails so that voters *will* carefully review them. As the Brennan Center and others have demonstrated, paper trails will make a voting system more secure and reliable only if a minimum number of voters review them and notice whether their choices are accurately reflected on the paper trail.[96] However, there has been surprisingly little scientific study to determine how many voters review their paper trails and how effective they are as a tool to catch errors.

E. Study of effect of alternative voting systems

Increasingly, jurisdictions around the country are looking at alternative voting systems, including instant runoff voting, fusion voting, and proportional representation. While all of these systems merit consideration, they can present new challenges for simple ballot design. As an example, San Francisco adopted instant runoff voting in 2002, but it only applies to city and county races.[97] Everything else on a voter's ballot is represented as a traditional election. Mixing voting systems in the same election and on the same ballot can present the kind of confusing inconsistencies previously discussed in this report. In addition to conducting usability testing on ballots employing alternative voting systems, election officials would greatly benefit from fully understanding how such systems might affect the ability of voters to accurately cast their votes.

F. Use templates/checklists to support the updating of local election laws

Appendix A contains a sample checklist for ballot designers and recommends that states develop templates for ballot design based on the different models of voting equipment used in the state. The EAC's *Effective Designs for the Administration of Federal Elections* can help election officials develop such templates. It would be of great help to local legislators, election department legislative liaisons and election officials if attorneys and usability experts worked together to determine what local legislation and regulations needed to be amended to foster good ballot design.

G. Reconsider the straight-party ballot feature

Fifteen states still have an option on the ballot that allows voters to cast a straight-party ballot with one mark. While this feature obviously can simplify the process for voters who only intend to cast a straight-party ticket, recent studies show that the straight-party feature confuses voters and leads to more voting errors.[98]

Conclusion

Literacy tests to gain access to the polls were banned in the United States in 1965 with the passage of the Voting Rights Act.[99] But in November 2008, eight years after an election debacle of historic proportions, millions of voters across the United States will face a literacy test of a different sort *after* they've stepped into the voting booth. Their intended choices may be recorded only if they can understand instructions written at a high reading level, often using legal and election terminology. And they will only be counted if they successfully navigate ballot designs that are needlessly complicated, where candidates for the same office may be listed on multiple columns or pages, or different contests are inconsistently formatted.

As we have tried to demonstrate in this report, ballot design and instructions can have a huge impact on election results. We sampled some of the more "high profile" ballot design disasters over the last several years; this is not a comprehensive analysis of the cost of poor ballot design on elections and votes counted. But, the examples illustrate how dramatically poor ballot design can affect vote totals — particularly when a number of design flaws appear on the same ballot. Not surprisingly, when these mistakes affected many ballots (by appearing on a significant percentage of the ballots in large counties like Los Angeles or Palm Beach, or on most of the ballots in a particular state), tens of thousands — and sometimes *hundreds of thousands* — of votes in a single federal or statewide race have been lost. This does not even include the voters who may have been so confused by a ballot design that they cast their ballot for a candidate for whom they did not intend to vote (for obvious reasons, it is far more difficult to determine this than to know when a voter failed to successfully cast a vote at all).

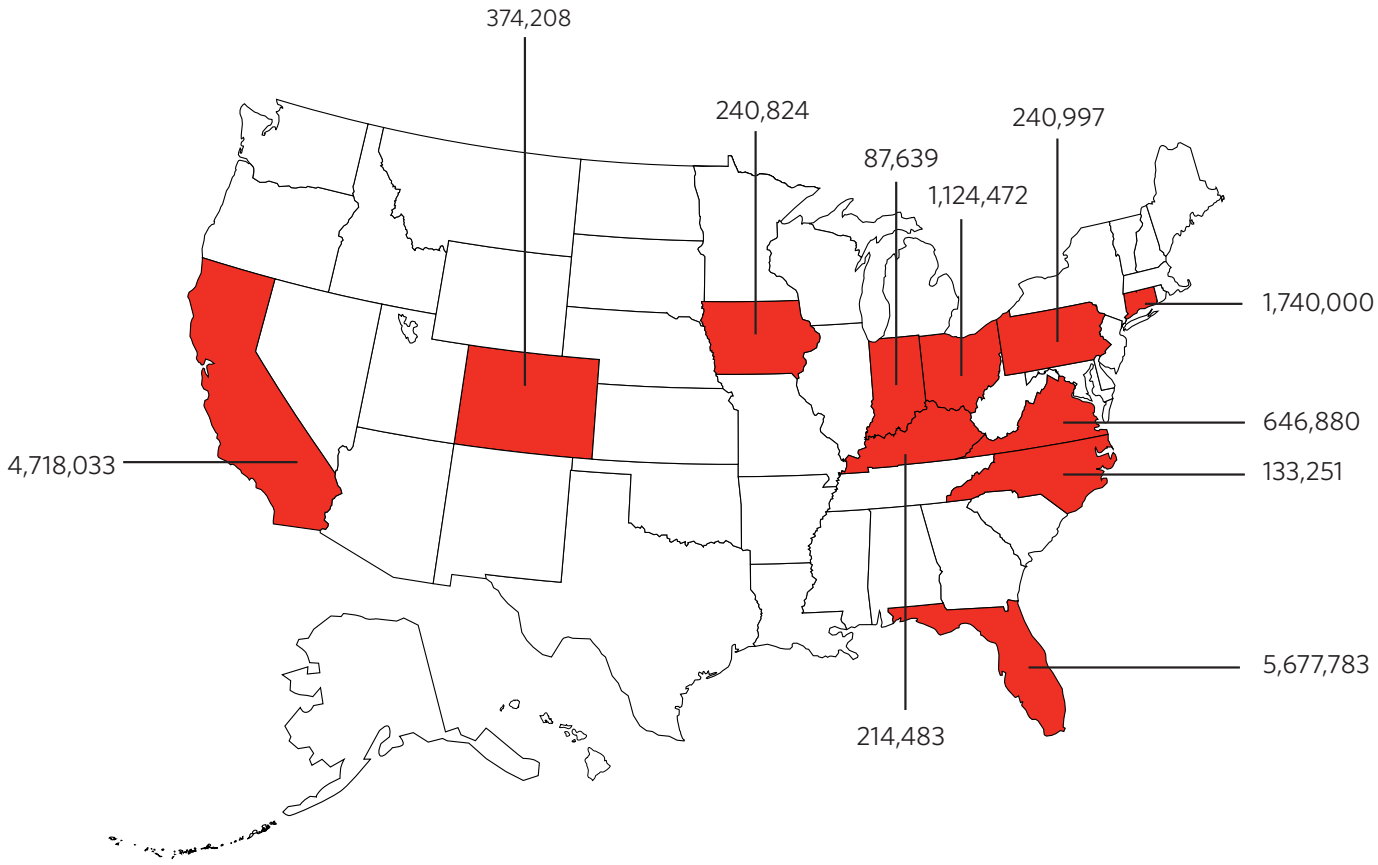
Better ballot design will make it far more likely that the preferred candidates of all voters will be declared winners of their contests.

Palm Beach County 2000 should have been a wake-up call to legislators, election officials, and watchdog groups that ensuring good ballot design is a critical election administration issue that needs to be systematically addressed. Unfortunately, for the last eight years, it has continued to be largely ignored. The predictable result has disproportionately affected low-income and elderly voters, and thrown several important elections into turmoil.

The good news is that there is still time before November 2008 to ensure that ballot design flaws do not throw the results of another closely contested race into doubt, as has happened in several federal and state races in the last decade. And unlike changes to equipment (which, there is no question, could make systems more secure, accessible and usable), improving ballot design and instructions is possible for little or no cost, and a relatively small-scale investment of time.

Appendix

Number of registered voters in jurisdictions where main voting system changed between 2006 and 2008 general elections[100]



Source: Verified Voting

State	Registered Voters
California	4,718,003
Connecticut	1,740,000
Colorado	374,208
Florida	5,677,783
Indiana	87,639
Iowa	240,824
Kentucky	214,483
North Carolina	133,521
Ohio	1,124,472
Pennsylvania	240,997
Virginia	646,880
Total Nationwide	**15,194,476**

Number of registered voters in counties in selected states where main voting system changed between 2006 and 2008 general elections[101]

California	Registered Voters
Del Norte	11,854
Glenn	11,870
Imperial	53,565
Inyo	9,918
Kern	287,672
Kings	44,504
Mariposa	11,196
Mono	6,706
Monterey	147,714
Napa	66,665
Riverside	763,923
San Benito	23,903
San Bernardino	754,978
San Diego	1,369,496
San Joaquin	253,148
Santa Clara	715,492
Shasta	90,700
Sutter	38,525
Tehama	29,473
Yuba	26,731

Colorado	Registered Voters
Denver	374,208

Florida	Registered Voters
Broward	927,613
Charlotte	115,243
Collier	195,109
Hillsborough	633,115
Indian River	83,470
Lake	178,168
Lee	288,609
Martin	97,239
Miami-Dade	1,122,815
Nassau	44,382
Palm Beach	796,891
Pasco	278,098
Pinellas	613,156
Sarasota	247,250
Sumter	56,625

Indiana	Registered Voters
Boone	36,892
Cass	21,768
Parke	12,201
Randolph	16,778

Kentucky	Registered Voters
Boyle	19,001
Carlisle	3,931
Christian	37,415
Daviess	64,140
Garrard	11,321
Hardin	61,821
Logan	16,854

North Carolina	Registered Voters
Chatham	39,491
Iredell	94,030

Ohio	Registered Voters
Cuyahoga	1,053,232
Mercer	26,636
Van Wert	20,192
Putnam	24,412

Pennsylvania	Registered Voters
Fayette	89,584
Lackawanna	151,416

Virginia	Registered Voters
Fairfax	646,880

Endnotes

[1] Lawrence Norden et al., The Machinery Of Democracy: Protecting Elections In An Electronic World (Brennan Center for Justice ed., 2006), *available at* http://www.brennancenter.org/content/resource/machinery_of_democracy_protecting_elections_in_an_electronic_world/; *EVEREST: Evaluation and Validation of Election-Related Equipment, Standards & Testing* (Dec. 7, 2007) (prepared by teams from Pennsylvania State University, the University of Pennsylvania, and WebWise Security, Inc. as part of the EVEREST voting systems analysis project initiated by the Secretary of State of Ohio), *available at* http://www.sos.state.oh.us/sos/info/EVEREST/14-AcademicFinalEVERESTReport.pdf; Ariel J. Feldman, J. Alex Halderman & Edward W. Felten, *Security Analysis of the Diebold AccuVote-TS Voting Machine* (Sept. 13, 2006), *available at* http://itpolicy.princeton.edu/voting/ts-paper.pdf; A. Kiayias et al., *Integrity Vulnerabilities in the Diebold TSX Voting Terminal* (Voting Technology Research Center & Department of Computer Science and Engineering, University of Connecticut, July 16, 2007), *available at* http://voter.engr.uconn.edu/voter/Report-TSX_files/TSXVoting_Terminal_Report.pdf.

[2] *Another Voting Glitch in Baldwin County,* Associated Press, Nov. 14, 2006; Louis Short, *Vote Machine Problems Reported,* SUN-TIMES (Heber Springs, AR), Nov. 27, 2006; Jeremy Milarsky & Rafael A. Olmeda, *Broward County, Fla., Fixes Computer Error To Correct Statewide Gambling Vote,* South Florida Sun-Sentinel, Nov. 5, 2004; *Dozens of Voters Complain About Glitch,* Sarasota Herald-Tribune, Nov. 8, 2006; Steve Gunn & Lynn Moore, *Election Turns Around When Inspectors 'See The Light',* Muskegon Chronicle, Sept. 4. 2004; Nate Jennings, *Problem Machines Spur Call for Recount,* Lincoln Journal STAR, Nov. 14, 2004; Wade Rawlins & Rob Christensen, *'Winners' May Be Losers,* News and Observer, Nov. 9, 2002; Editorial, *Board Should Hold a Revote for the City,* Reading Eagle, July 20, 2005; Lauren Glendenning, *Voting Glitch in Fairfax,* Connection Newspapers, Nov. 8, 2006; Jake Rigdon, *About 600 Medford Ballots Cast in November Ignored,* Marshfield News-Herald, Mar. 12, 2004.

[3] In reference to voters' failure to accurately record their intended votes in Palm Beach County in 2000, Theresa LePore, Palm Beach County Elections Supervisor was quoted as saying, "All through life you have to follow instructions. And if you don't follow instructions . . . ." Justice O'Connor also famously appeared to blame the voters of Palm Beach County for failing to follow instructions. When questioning David Boies about whether to count certain ambiguous votes, she asked, "Well, why isn't the standard the one that voters are instructed to follow, for goodness sakes? I mean, it couldn't be clearer." Mark Danner, *The Road to Illegitimacy,* New York Review of Books, Feb. 22, 2001.

[4] As an example, the alignment of candidate names and their corresponding punch card ballot holes on the 2000 Palm Beach County butterfly ballot (*see* p 20 *infra*) appeared to make it easier for supporters of George W. Bush to accurately record their votes than supporters of Al Gore.

[5] Email from Sean Flaherty, Verified Voting to Lawrence Norden (June 20, 2008) (on file with the authors).

[6] This is an average of the number of voting-age persons who moved between 2000 and 2006. Based on U.S. Census Bureau, Current Population Survey data on mobility.

[7] Associated Press, *Historic Election Inspiring Millions of New Voters, Survey Finds,* CNN.com, May 7, 2008, http://www.cnn.com/2008/POLITICS/05/06/new.voters.ap/index.html.

[8] U.S. Election Assistance Commission, Effective Designs For The Administration Of Federal Elections (June 2007), *available at* http://www.eac.gov/election/effective-polling-place-designs; *See also* Marcia Lausen, Design For Democracy: Ballot And Election Design (University of Chicago Press 2007).

[9] David Kimball & Martha Kropf, *Dos and Don'ts of Ballot Design,* AEI/Brookings Election Reform Project (Oct. 2007), *available at* http://www.electionreformproject.org/Resources/314eaad7-6dc9-4dad-b6e4-5daf8f51b79e/r1/Detail.aspx.

[10] Paul S. Herrnson et al., Voting Technology: The Not-So-Simple Act Of Casting A Ballot (Brookings Institution Press 2008).

[11] *Voluntary Voting System Guidelines Recommendations to the Election Assistance Commission* (prepared at the direction of the Technical Guidelines Development Committee) (Aug. 31, 2007), *available at* http://www.eac.gov/files/vvsg/Final-TGDC-VVSG-08312007.pdf.

[12] Email from John Lindback, Oregon Election Director to Lawrence Norden (June 2, 2008) (on file with the authors).

[13] According to the League of Women Voters of New Jersey and the League of Women Voters of California, sample ballots are mailed to all registered voters in those states prior to each election. League of Women Voters of New Jersey, *New Jersey Citizens' Guide to Government* (2005), http://www.lwvnj.org/guide/voting.shtml; League of Women Voters of California, *Preparing to Vote,* http://ca.lwv.org/lwvc/edfund/elections/e3prep.html.

[14] *See Sample Ballots May Have Added to Confusion,* St. Petersburg Times, Dec. 11, 2006, *available at* http://www.sptimes.com/2006/12/11/State/Sample_ballots_may_ha.shtml, noting that the sample ballot sent out in Sarasota County in November 2006 was different than the now notorious ballot voters saw on electronic voting machines on Election Day.

[15] Fla. Admin. Code Ann. r. 1S-2.032 (2008).

[16] Id.

[17] Press Release, AIGA, 2007 AIGA Election Design Fellow Selected In Oregon (Oct. 22, 2007), *available at* http://www.aiga.org/content.cfm/press-071022.

[18] This practice is required in Florida, for example. Fla. Stat. § 101.595 (2008). Florida's Secretary of State has issued re0ports on under- and overvotes in federal elections since 2002. They are available on the Division of Elections website at: http://election.dos.state.fl.us/reports/electreports.shtml.

[19] Kimball & Kropf, *supra* note 9.

[20] National Commission on Federal Election Reform, T*o Assure Pride and Confidence in the Electoral Process* 53-54 (Aug. 2001), *available at* http://webstorage3.mcpa.virginia.edu/commissions/ comm_2001.pdf.

[21] Robert Darcy & Anne Schneider, *Confusing Ballots, Roll-Off, and the Black Vote,* 42 Western Political Quarterly 347-364 (1989); Stephen M. Nichols, *State Referendum Voting, Ballot Roll-off, and the Effect of*

New Electoral Technology, 30 State And Local Government Review 106-117 (1998); Michael Tomz & Robert P. Van Houweling, *How Does Voting Equipment Affect the Racial Gap in Voided Ballots?,* 47 American Journal Of Political Science 46-60 (2003); Stephen Knack & Martha Kropf, *Invalidated Ballots in the 1996 Presidential Election: A County-Level Analysis,* 65 Journal Of Politics 881-897 (2003); Michael C. Herron & Jasjeet S. Sekhon, *Overvoting and Representation: An Examination of Overvoted Presidential Ballots in Broward and Miami-Dade Counties,* 22 Electoral Studies 21-47 (2003); David C. Kimball et al., *Unrecorded Votes and Political Representation, in* Counting Votes: Lessons From The 2000 Presidential Election In Florida (Robert P. Watson, ed., Univ. Press of Florida 2004); R. Michael Alvarez et al., *Counting Ballots and the 2000 Election: What Went Wrong?,* in Rethinking The Vote (Ann N. Crigler et al., eds., Oxford Univ. Press 2004); Justin Buchler et al., *Punch Card Technology and the Racial Gap in Residual Votes,* 2 Perspectives On Politics 517-524 (2004).

[22] All data in this report related to residual votes and residual vote rates is on file with the authors.

[23] Don Van Natta Jr. & Dana Canedy, *The 2000 Elections: The Palm Beach Ballot; Florida Democrats Say Ballot's Design Hurt Gore,* New York Times, Nov. 9, 2000, at A1.

[24] Note that a combined undervote and overvote rate of more than 1% in a presidential election is unusual — which means that in Palm Beach County where 462,588 ballots were cast for president, we should have expected fewer than 5,000 unrecorded votes in this race. Experimental evidence suggests that the butterfly ballot is a poor design. Robert C. Sinclair et al., *An Electoral Butterfly Effect,* 408 Nature 665 (Dec. 7, 2000), *available at* http://www.nature.com/nature/journal/v408/n6813/pdf/408665b0.pdf.

[25] Van Natta Jr. & Canedy, *supra* note 23; John Lantigua, *County Official Knew About Ballot Confusion,* Salon News, Nov. 9, 2000, http://archive.salon.com/politics/feature/2000/11/09/lapore/.

[26] Jonathan N. Wand *et al., The Butterfly Did It: The Aberrant Vote for Buchanan in Palm Beach County, Florida,* 95 American Political Science Review 793 (2001). Eighteen other Florida counties also listed the presidential candidates in multiple columns or on two ballot pages. The large number of overvotes for president in those counties also affected the outcome of the 2000 election. *See* Walter R. Mebane, Jr., *The Wrong Man is President! Overvotes in the 2000 Presidential Election in Florida,* 2 Perspectives On Politics 525 (2004).

[27] Danner, *supra* note 3.

[28] *Id.*

[29] Ballot Differences, *available at* http://electionupdates.caltech.edu/BALLOTS.pdf.

[30] Kate Zernike, *House Democrats To Object to Florida Election Outcome,* New York Times, Dec. 30, 2006, at A14.

[31] David Jefferson, *What Happened in Sarasota County?*, The Bridge 17, 19 (Summer 2007), *available at* http://www.nae.edu/nae/bridgecom.nsf/weblinks/MKEZ-744KWK?OpenDocument; Laurin Frisina et al., *Ballot Formats, Touchscreens, and Undervotes: A Study of the 2006 Midterm Elections in Florida* 7 Election Law Journal 26 (2008), *available at* http://www.liebertonline.com/doi/abs/10.1089/ elj.2008.7103.

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[33] Maurice Tamman & Matthew Doig, *North Port Area Had the Most Undervotes,* Sarasota Herald-Tribune, Nov. 10, 2006, at A1.

[34] Ballot Differences, *supra* note 29.

[35] *Id.*

[36] Todd Ruger, *Voting Glitch Prompts Warning,* Sarasota Herald-Tribune, Nov. 5, 2006, at B1; *Dozens of Voters Complain About Glitch,* Sarasota Herald-Tribune, Nov. 8, 2006, at A6; Tom Lyons, *18,000 Reasons To Have a Paper Trail,* Sarasota Herald-Tribune, Nov. 9, 2006, at B1; *Editorial, A Ballot Fiasco?: Sarasota Undervote Too High To Be Credible,* Bradenton Herald, Nov. 10, 2006; Mark K. Matthews, *Touch-screen Voting Tossed in Sarasota; County Voters Mandated 'Verified Paper Ballots.' Meanwhile, A Recount Continues,* Orlando Sentinel, Nov. 15, 2006, at A1.

[37] U.S. Government Accountability Office, *Results of GAO's Testing of Voting Systems Used in Sarasota County in Florida's 13th Congressional District* (Feb. 8, 2008), *available at* http://www.gao.gov/ new.items/d08425t.pdf.

[38] U.S. Government Accountability Office, *Further Testing Could Provide Increased but Not Absoute Assurance That Voting Systems Did Not Cause Undervotes in Florida's 13th Congressional District* (Oct. 2, 2007), *available* at http://www.gao.gov/new.items/d0897t.pdf.

[39] Iowa will not use "complete-the-arrow" ballots in November 2008. Telephone interview with Iowa Secretary of State Michael Mauro, June 4, 2008.

[40] David Kimball & Martha Kropf, *Ballot Design and Unrecorded Votes on Paper-Based Ballots* 69 Public Opinion Quarterly 522-526 (2005), *available at* http://poq.oxfordjournals.org/cgi/reprint/69/4/508.pdf; Charles S. Bullock, III and M. V. Hood III, *One Person—No Vote; One Vote; Two Votes: Voting Methods, Ballot Types, and Undervote Frequency in the 2000 Presidential Election* 83 Social Science Quarterly 990 (2002).

[41] Based on a study of 641 counties using precinct count optical systems and 767 counties using central count optical scan systems. Data on file with the authors.

[42] The estimated additional residual votes were based on the difference between the residual vote rates in Table 1. Based on available data, there were 1,881,576 ballots cast on central count optical scan machines with the arrow format and 10,730,610 ballots cast on precinct count optical scan machines with the arrow format in the 2004 presidential election. So, [(1,881,576 * .023) – (1,881,576 * ,016)] + [(10,730,610 * .009 – 10,730,610 * .006)] = 45,362.

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[44] Ohio Rev. Code § 3505.03 (2007).

[45] E-mail from Steve Harsman, Director, Montgomery County Board of Elections, to Ellis Jacobs, Advocates for Basic Legal Equity (Apr. 28,

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[47] *Id.*

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] Ben Bederson, *Voting Technology: The Not-So-Simple Act of Casting a Ballot* (PowerPoint presentation slides), *available at* www.cs.umd.edu/~bederson/voting/USACM-bederson-feb-2008.pdf.

[52] U.S. Election Assistance Commission *supra* note 8, at 7.21. ("[Diverse] Participants often failed to notice that voting instructions changed from contest to contest."). The research team for the EAC report anecdotally observed difficulties caused by confusing or unclear instructions for even the most experienced voters participating in the studies. Various findings on the impact of instructions language for voters using touch screen systems can be found at pages 7.37-7.39 of the EAC's report.

[53] Kan. Stat. Ann. § 25-2902 (2007).

[54] Kimball & Kropf, *supra* note 40.

[55] *Id.;* Janice Redish, *Guidelines for Writing Clear Instructions and Messages for Voters and Poll Workers* (prepared for the National Institute of Standards and Technology) (Feb. 21, 2006), *available at* http://vote.nist.gov/032906PlainLanguageRpt.pdf; Janice Redish, *Review of the Gap Between Instructions for Voting and Best Practice in Providing Instructions* (prepared for the National Institute of Standards and Technology) (Dec. 9, 2005), *available at* http://vote.nist.gov/instructiongap.pdf.

[56] Kimball & Kropf, *supra* note 40. Ballots in the EAC pilot studies of best practices in ballot design followed this advice, placing both verbal and visual instructions in the first column.

[57] Guidelines for Writing, *supra* note 55. Review of the Gap, *supra* note 55.

[58] There is a lot of variation in terminology used for "decline-to-state" voters (independent, unaffiliated, nonpartisan, etc). This is another problem in a highly mobile society, where people may vote in several different jurisdictions in their lifetime.

[59] Since 2000, California has held "modified" close primaries. Unaffiliated or "decline-to-state" voters may participate in a party's primary election if authorized by the party's rules. In California, these voters were permitted to cast ballots in the Democratic or American Independent primaries, but not the Republican primary. Changes in voting rules may make election officials' jobs of designing ballots more complex to accommodate different types of voters.

[60] Instructions for nonpartisan voters crossing over to vote in the Democratic or American Independent party primaries were part of poll worker training materials and instructional videos and final mailings to Precinct Inspectors the weekend before the election. Memorandum from Dean C. Logan, Acting Los Angeles County Registrar-Recorder/County Clerk to Los Angeles County Board of Supervisors (Feb. 11, 2008), *available at* http://www.lavote.net/VOTER/PDFS/ELECTION_RELATED/ 02052008_NON_PARTISAN_REVIEW.pdf.

[61] *Discussion of Problems Faced by Voters at the 2008 Presidential Primary Election: Joint Informational Hearing Before the Assemb. Elections & Redistricting Comm., S. Elections, Reapportionment, & Constitutional Amendments Comm., & S. Select Comm. on Integrity of Elections* 2007-2008 Leg., Reg. Sess. (Ca. 2008) (testimony of Dean C. Logan, Acting Registrar-Recorder/County Clerk – Los Angeles County), *available at* http://www.lavote.net/VOTER/PDFS/ELECTION_RELATED/ 02052008_RRCC_TESTIMONY.pdf.

[62] *Id.*

[63] Email from Efrain Escobedo, Executive Liason, Los Angeles County Registrar-Recorder/County Clerk (June 9, 2008) (on file with the authors).

[64] Editorial, *The Return of the 'Butterfly Ballot',* New York Times, Oct. 29, 2004, at A24.

[65] Kaye Spector, *Local Ballot Is Confusing for Some Absentee Voters,* Cleveland Plain Dealer, Oct. 21, 2004, at B3.

[66] 42 U.S.C. § 15481 (2007).

[67] 42 U.S.C. § 15481(a)(1)(A) (2007).

[68] U.S. Election Assistance Commission, *supra* note 8; Herrnson et al., *supra* note 10.

[69] H.B. 1914, 92nd Gen. Assem., Reg. Sess. No. 41 (Ill. 2001).

[70] For examples of appropriate vocabulary, *see* Guidelines for Writing, *supra* note 55.

[71] New York State will be replacing its lever voting machines with optical scan voting systems with anticipated completion of the transition and implementation by May 2009. Todd D. Valentine, Special Counsel, & Paul M. Collins, Special Deputy Litigation Counsel, New York State Board of Elections, *Summary of Revised Plan A Time Line* (Jan. 11, 2008), *available at* http://www.elections.state.ny.us/ NYSBOE/hava/HAVAComplianceSummaryRevisedPlanATimeLine01112008.pdf.

[72] N.Y. Elec. Law § 6209.2 (McKinney 2008).

[73] *See, e.g.,* David C. Kimball & Martha Kropf, *Voting Technology, Ballot Measures, and Residual Votes,* 36 American Politics Research 479 (2008); Herrnson et al., *supra* note 10.

[74] N.Y. Elec. Law §§ 7-104(4)(a), 7-106(6) (McKinney 2008).

[75] N.Y. Elec. Law §§ 7-106(2), 7-114(1)(g) (McKinney 2008).

[76] *See, e.g.,* Ohio Rev. Code §§ 3505.08, 3505.10 (2007).

[77] *See, e.g.,* Rolf. F. Rehe, Typography: How To Make It Most Legible (Design Research International, Carmel, IN, 1974). ("Words set in all-caps . . . do not provide specific word-shape outlines since they produce oblong, uniform word-shape. No cues can be perceived by the eye, and a time-consuming deciphering of the word, letter by letter, is necessary ... text set in all-caps retards reading speed by about 13%, due to an increase in fixation time, and a corresponding decrease in the number of words perceived per fixations.")

[78] Ohio Rev. Code § 3505.10 (2007).

[79] *Id.*

[80] Ohio Rev. Code § 3505.12 (2007).

[81] Phil Long, Jack Dolan & Marc Caputo, *SARASOTA RECOUNT: Cluttered Ballot May Be At Fault, Expert Says,* Miami Herald, Nov. 15, 2006, at B1. *See also* Ted Selker, Jonathan A. Goler & Lorin F. Wilde, *Who Does Better with a Big Interface? Improving Voting Performance of Reading for Disabled Voters* CalTech/MIT Voting Technology Project Working Paper #24 (Feb. 2005), *available at* http://www.vote.caltech.edu/media/documents/wps/vtp_wp24.pdf.

[82] Lawrence Norden et al., The Machinery Of Democracy: Voting System Security, Accessibility, Usability, And Cost (Brennan Center for Justice ed., 2006), *available at* http://www.brennancenter.org/content/resource/the_machinery_of_democracy_voting_system_security_accessibility_usability_a/.

[83] The LEO usability testing kit was developed in a Usability Professionals' Association workshop at the Michigan State University Usability and Accessibility Center.

[84] Usability Professionals' Association, *The LEO Kit: Usability Testing for Local Election Officials,* http://www.usabilityprofessionals.org/civiclife/voting/leo_testing.html.

[85] Problems with the ballot layout in Sarasota County were noted during early voting, when 17% of ballots recorded no votes for the Congressional district race. County Elections Supervisor Kathy Dent instructed poll workers to warn voters not to miss voting in the Congressional district race. Tamman & Doig, supra note 33. In Los Angeles County, instructions for nonpartisan voters crossing over to vote in the Democratic or American Independent party primaries were part of poll worker training materials and instructional videos and final mailings to Precinct Inspectors the weekend before the election. Memorandum from Dean C. Logan, *supra* note 60.

[86] Fla. Admin. Code Ann. r. 1S-2.032 (2008).

[87] Designers testing their own designs may be less willing to admit deficiencies. Jakob Nielson, *Should Designers and Developers Do Usability?,* Jakob Nielson's Alertbox (June 25, 2007), http://www.useit.com/alertbox/own-usability.html. Knowing too much may prevent designers from seeing their biases. In the elections context, a specific variant of this problem is that election officials are too familiar with the terminology and process of elections to look at a ballot from the perspective of a new or infrequent voter. Frank Spillers, *How To Avoid Being Blinded by Your Own Design: Seeing the Forest for the Trees,* Demystifying Usability (June 1, 2005), http://experiencedynamics.blogs.com/site_search_usability/ 2005/06/dr_usability_sa.html.

[88] Email from Ted Bromley, Connecticut Secretary of State's Office (June 12, 2008) (on file with the authors); Email from Johnnie McLean, Deputy Director, North Carolina State Board of Elections (June 9, 2008) (on file with the authors); Email from Kathy Summers, Elections Specialist, Division of Elections, Tennessee Secretary of State (June 10, 2008) (on file with the authors); Email from Barbara C. Cockrell, Director of Operations, Virginia State Board of Elections (June 11, 2008) (on file with the authors); Email from Steve Pickett, Election Specialist – Local Election Administration, Government Accountability Board – Elections Division (June 10, 2008) (on file with the authors). The Virginia State Board of Elections must approve each county's ballot for layout, design, and content once the county creates it. They do this in order to carry out state statutory provisions requiring the SBOE to ensure uniformity across state. Va. Code Ann. § 24.2-103 (2007). Wisconsin counties are not required to submit their ballots to the state for approval; however the Wisconsin Government Accountability Board – Elections Division reviews ballots for any State and Federal offices sent to them by the counties.

[89] Telephone interview with Secretary of State Jennifer Brunner on May 9, 2008.

[90] Fla. Stat. Ann. § 101.595 (2008).

[91] 42 U.S.C. § 15322 (2007).

[92] Press Release *supra* note 17; U.S. Election Assistance Commission Public Meeting, Minneapolis, MN (Apr. 16, 2008) (written statement of John A. Gale, Nebraska Secretary of State), *available at* http://www.eac.gov/News/docs/public-mtg-08-04-16-08-minneapolis-mn-testimony-sec-john-gale/attachment_download/file.

[93] One exception is the EAC team who did study this issue, resulting in recommendations found in *Effective Designs For The Administration Of Federal Elections.* It is the authors' understanding that a study aimed specifically at instructions and messages on ballots is underway at the National Institute of Standards and Technology. Also, this was the subject of doctoral dissertation. Sarah P. Everett, The Usability of Electronic Voting Machines and How Votes Can Be Changed Without Detection (May 2007) (unpublished Ph.D. dissertation, Rice University), *available at* http://chil.rice.edu/research/pdf/ EverettDissertation.pdf.

[94] Norden et al., *supra* note 1.

[95] Everett, *supra* note 93.

[96] Norden et al., *supra* note 1.

[97] Dean E. Murphy, *New Runoff System in San Francisco Has the Rival Candidates Cooperating,* New York Times, Sept. 30, 2004, at A1.

[98] Herrnson et al., *supra* note 10; Richard G. Niemi & Paul S. Herrnson, *Beyond the Butterfly: The Complexity of U.S. Ballots,* 1 Perspectives On Politics 317 (2003).

[99] 42 U.S.C. § 1973b (2007).

[100] Email from Sean Flaherty, Verified Voting to Lawrence Norden (June 20, 2008) (on file with the authors). Numbers of registered voters are from 2008, as reported on state election officials' websites.

[101] Email from Sean Flaherty, Verified Voting to Margaret Chen (June 27, 2008) (on file with the authors). 144 towns in Connecticut changed their primary voting systems since 2006. 19 counties in Iowa (Appanoose, Clay, Clayton, Fayette, Jackson, Keokuk, Lucas, Mahaska, Marion, Mitchell, Monroe, Plymouth, Poweshiek, Ringgold, Union, Warren, Wayne, Winnebago, and Worth) changed their primary voting systems since 2006.

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