

Equitable Ballot Design and Voter Education Materials

HIGHLIGHTS

A healthy democracy requires that every citizen has an equal and effective vote. Further, all voters should be able to express their preferences easily and be confident that every effort has been made to record and count those preferences accurately.

Unfortunately, poor ballot design hampers citizens' ability to express their preferences. Inaccessible voter education materials limit voters' ability to learn the information vital to participating in elections. Conversely, effective ballot and voter education design can lower ballot rejection rates, decrease the number of ballots that require curing, decrease the time it takes to vote, increase voter turnout, and ensure that every voter's ballot is counted.

This report reviews current policies across multiple states, including three states of interest: Michigan, North Carolina, and Pennsylvania. We summarize nationwide best practices and suggest a series of evidence-based recommendations to improve ballot design, language and disability accessibility, and voter education materials.

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Executive Summary

A healthy and high-quality participatory democracy requires that every citizen has an equal and effective vote. Further, all voters should be able to express their preferences easily and have confidence that every effort has been made to record and count those preferences accurately.

Unfortunately, poor ballot design hampers citizens' ability to express their preferences. Conversely, effective ballot design can lower ballot rejection rates, decrease the number of ballots that require curing, decrease the time it takes to vote, increase voter turnout, and ensure that every voter's ballot is counted, regardless of race, economic status, age, ability, or language. Furthermore, inaccessible voter education materials limit voters' ability to learn the information vital to participating in our democratic system.

In this report, intended for those who study and administer elections, we review current policies across multiple states, including three states of particular interest: Michigan, North Carolina, and Pennsylvania. We summarize nationwide best practices and, using the best available science, suggest a series of evidence-based recommendations to improve ballot and polling place design, language accessibility, disability accessibility, and voter education materials.

Overview of Recommendations

Election science suggests that, together, these recommendations will help make sure every eligible voter can fully participate in elections.

Ballot and Polling Place Materials

State and/or local election officials should take the following actions:

- Adhere to US Election Assistance Commission (EAC) polling place material design guidelines.
- Ensure that ballot instructions
 - are printed horizontally and separate from candidate lists;
 - appear immediately before associated tasks;
 - appear in the top left-hand corner of the ballot;
 - include information on how to write in candidates, how to fix errors, and the consequences of spoiled ballots; and
 - include information on how to begin the voting process and change candidate selections on electronic ballots.

- Include a straight-ticket voting option that informs voters that using this option does not select choices in nonpartisan contests.
- List candidate names for each race in one, continuous column.
- Write information so that it can be understood by voters with an eighth-grade reading level.
- Use shading/bolding/headers to clearly differentiate between races.
- Present one contest on the screen at a time on electronic ballots.
- Use electronic voting machines that clearly inform voters of instances of over- and undervoting, permit voters to choose the ballot language (e.g., English, Spanish, etc.), and permit voters to change text size and contrast levels at any point in the voting process.
- Make sure absentee/mail ballot envelopes clearly indicate sections voters need to complete, including where to place signatures and dates, through the strategic use of coloring, bolding, and/or an X.
- Make sure absentee/mail ballots that use both secrecy and return envelopes include instructions with graphics indicating the correct envelope order and placement.
- Conduct usability and accessibility tests before finalizing ballot designs.

Language Accessibility

State and/or local election officials should take the following actions to ensure voters with limited English proficiency (LEP) can successfully participate in elections:

- Include voters with LEP in decisionmaking, testing, and implementation of language access practices.
- Voluntarily lower the Voting Rights Act (VRA) Section 203 language material provision threshold from 5 percent (or 10,000) to 3 percent (or 7,000).
- Expand the list of provided languages beyond those currently covered in VRA Section 203 (Spanish, Asian, Native American, and Alaska Native languages).
- Expand the list of voters covered by VRA Section 208, which currently focuses on voting assistance for voters with blindness, disability, or inability to read or write, to include voters with LEP.
- Abolish restrictions to VRA Section 208.
- Include an optional language preference section on voter registration forms to help election offices estimate the number of voters with LEP within jurisdictions.
- Collaborate with community groups on language accessibility processes.

- Conduct preelection accessibility tests and postelection procedural audits.
- Allocate more resources for language accessibility policies and programs and train officials, administrators, and workers on language accessibility procedures.

Disability Accessibility

State and/or local election officials should take the following actions to ensure voters with disabilities can successfully participate in elections:

- Include voters with disabilities in decisionmaking, testing, and implementation of disability accessibility procedures.
- Ensure that waits to use accessible voting machines are roughly equivalent to waits for non-accessible voting machines by having more than one accessible voting machine at every polling location and by ensuring that precincts with larger populations of voters with disabilities have enough accessible voting machines.
- Include an optional disability access preference section on voter registration forms to help election offices estimate the number of voters with disabilities within jurisdictions.
- Offer mail-in ballots in multiple formats that incorporate accessibility features.
- Permit voters with disabilities to request mail ballots online and by telephone and implement permanent absentee voting.
- Include informational illustrations with alternative text captions on mail ballots.
- Allow voters with disabilities to return ballots electronically, and make more accessible or waive signature matching/witness signature requirements.
- Consider adopting electronic poll books (EPBs).
- Conduct preelection accessibility tests and postelection procedural audits.
- Allocate more resources for language accessibility policies and programs and train officials, administrators, and workers on disability accessibility procedures.

Voter Education Materials

State and/or local election officials should take the following actions:

- Provide resources covering basic information on voting processes, answer common questions, highlight key dates and deadlines, and overview new election laws or policies.
- Use plain language and avoid confusing terminology.

- Make voter education information available via government websites, social media, and printed materials.
- Make election and voting information on government websites easy to find by using keywords and useful links and by placing the most important information at the center of the page.
- Release sample ballots that match official ballots.
- Include and make accessibility features on websites easy to locate.
- Make voter education materials in voters' home languages accessible by
 - informing voters about election processes, voting details, available language accommodations, and key dates;
 - including disclaimers on machine-assisted translations;
 - conducting voter education and outreach to groups with LEP within jurisdictions; and
 - testing the usability of accessibility features with voters with LEP.
- Make voter education materials accessible for voters with disabilities by
 - using strong color contrast, clear headings, bulleted lists, and a sans serif font of at least 12 points;
 - avoiding background patterns, text boxes, or tables;
 - including information to educate voters with disabilities about available accommodations;
 - complying with the Web Accessibility Initiative's Level AA of the Web Content Accessibility Guidelines 2.2; and
 - testing the usability of accessibility features with voters with disabilities.

Introduction

A truly democratic system relies, in part, on the idea that every citizen has an equal opportunity for effective participation (Dahl 1998). At a minimum, this means that all eligible voters have an equal opportunity to cast a ballot, that their ballots are successfully counted, and that each ballot carries equal weight in elections. However, poor ballot design substantially limits voters' political equality in our electoral system. Indeed, every election season, hundreds of thousands of votes go uncounted because of poorly designed ballots and voter education materials (Norden and Iyer 2011; Norden et al. 2008; Norden, Quesenbery, and Kimball 2012).

Administrators' ballot design choices have a direct impact on whether voters' ballots are counted or not. Therefore, these design choices can have a substantial effect on election outcomes and, by extension, voter representation and the ability to hold elected officials accountable. Poor ballot design increases the number of overvotes (when voters select too many candidates in a contest) and undervotes (when voters fail to select any or not enough candidates in a contest) as well as ballot roll-off (when voters do not select any candidates in races farther down the ballot) (Kimball and Kropf 2005; Wand et al. 2001).

By far, Florida's Palm Beach County's ballots in the 2000 presidential election are the most well known as badly designed (Norden et al. 2008). That election was decided by fewer than 600 votes, and nearly 4 percent of presidential votes in Palm Beach County went uncounted (Wand et al. 2001). Wand and coauthors (2001) argue that the ballot design decisions made by that one county resulted in a high number of unintentional presidential overvotes, likely resulting in George W. Bush winning the presidency. Ballot design again made national news in 2024 as the New Jersey primary ballot's "county-line" design, which groups candidates by party rather than by office, was struck down by courts (AP 2024).

User-friendly ballots can have a decisive effect on democracy. When ballots are easy to use, voters are more likely to cast a ballot for the candidate they intend to vote for and are more likely to have their ballots counted. As the ability to vote, freely and fairly, is the bedrock of a healthy democracy, focusing on improving ballot design is a relatively easy way to improve democratic functioning in the United States, to allow voters to participate in the process more effectively, and to hold elected officials accountable.

In addition to being better designed for all voters, ballots and voter education materials need to be designed for voters with LEP and voters with disabilities. Despite laws intended to make our elections accessible and open to every eligible voter, persistent inequalities and inaccessibility mean that voters with LEP and voters with disabilities are systematically excluded from fully participating in our elections. These exclusions damage the quality of our democracy, which requires widespread and equitable participation from a well-informed electorate (Dahl 1998).

Given the high degree of decentralization in US election administration—state and local governments determine much of how elections are conducted—this white paper provides a systematic review of literature related to ballot design, language accessibility, disability accessibility, and voter education materials. While relying on examples across the country, we focus on three key states: Michigan, North Carolina, and Pennsylvania. Based on our review, we provide a set of recommendations that would help election officials ensure more equitable and accessible ballot and voter education materials design.¹

¹ *This literature review sought to search for, appraise, and synthesize research evidence systematically. Our search for existing research involved an exhaustive search through top journals focused on elections and electoral analysis, including, but not limited to, American Journal of Political Science; Disability and Health Journal; Election Law Journal: Rules, Politics, and Policy; Electoral Studies; Political Behavior; Social Science Quarterly; and The Journal of Politics, and Voting Technologies. Further, we examined manuscripts published by top academic presses: Cambridge University Press, Harvard University Press, and the University of Florida Press. Additionally, we sought research from government entities and*

Ballot and Polling Place Material Design

Badly designed ballots can result in longer lines on Election Day and hundreds of thousands of rejected ballots, and they may also sway electoral outcomes when errors are larger than the contest's margins of victory (Norden et al. 2008; Norden, Quesenbery, and Kimball 2012). Because local election officials make a majority of the decisions regarding ballot layout and design, ballots' physical appearance varies widely across jurisdictions (Engstrom and Roberts 2020). Although this decentralization can allow local administrators to consider their communities' unique needs while designing ballots, it has also often resulted in some jurisdictions having disproportionately high rejection and over-/undervote rates.

Nationally, there has been an average of 1 percent over- and undervotes cast per election year since 2004 (MIT 2021). However, residual vote rates—the total number of over- or undervotes divided by the total number of people who turned out to vote—are disproportionately higher in certain districts. For example, a wide range of studies analyzing multiple elections have found that counties with higher populations of Black, Hispanic, low-income, less educated, and/or older voters have higher rates of unrecorded votes, in part because of faulty ballot design (Darcy and Schneider 1989; Herron and Sekhon 2003; Kimball and Kropf 2005; Kimball, Owens, and Keeney 2004; Knack and Kropf 2003; Norden and Iyer 2011; Norden, Quesenbery, and Kimball 2012; Sinclair and Alvarez 2004; Tomz and Van Houweling 2003). Part of the reason for the disproportionality in over- and undervotes is a patchwork of regulations across states.

For instance, in Pennsylvania, which has no statewide guidelines and where local officials have substantial discretion, ballot designs vary across jurisdictions. A cursory review of sample paper ballots in several precincts in Pennsylvania's three most populous counties—Allegheny, Philadelphia, and Montgomery—reveals that some precincts have ballots with instructions that are printed vertically, as is generally recommended because horizontal designs can confuse voters (AC 2023; AC 2024). On the other hand, Philadelphia County provided sample ballots for the 2024 primaries that included facsimiles of both paper and electronic ballots, but neither had an instructions section (PCC 2024).

While instructions are crucial to ballot usability, they are not always as clear as they can or should be. Instructions on ballots all generally advise voters to ask for a new ballot if they make a mistake, but some instructions do not tell voters the consequences of failing to do so (AC 2023). Furthermore, some sample ballots for Philadelphia and Montgomery counties' 2024 primary elections did not provide instructional illustrations (MC 2024; PCC 2024).

nongovernment organizations, including, but not limited to, the Center for Civic Design, Election Assistance Commission, the Brennan Center for Justice, the Pew Research Center, the MIT Election Data Science Lab, the Michigan Secretary of State, and the North Carolina State Board of Elections. Finally, we searched through popular news to put the existing research in context. These news sources include, but are not limited to, AP News and Spotlight PA.

Additionally, while it is generally recommended that ballots avoid using all capital letters, Philadelphia’s ballots use all capital letters in section headers (PCC 2024).

Unlike Pennsylvania, Michigan’s Department of State (MDOS) has instituted a series of ballot standards local officials are directed to follow (MDOS 2020). Ballots, for example, are to use a sans serif font no smaller than eight points (MDOS 2020). Moreover, MDOS provides a list of ballot headers, instructional language by election type, candidate race layouts, and shading guidance and supplies several sample ballots for election administrators to use to design their jurisdictions’ ballots (MDOS 2020). This state-level oversight greatly reduces disparities across jurisdictions; however, it should be noted that simply because the state provides standards does not mean that these ballot designs cannot be improved.²

Common Design Mistakes

There is no shortage of real-world examples of bad ballot design affecting voters’ ability to cast a ballot successfully. Common ballot design mistakes that cause voter confusion and higher rates of errors and uncounted ballots include poorly designed mail-in ballots, confusing and/or incomplete ballot instructions, no straight-ticket voting option, failure to differentiate between sections or contests, splitting contests, and confusing ballot measures.

Confusing and/or Incomplete Voting Instructions

Confusing voter instructions can take various forms: instructions that are separated from the associated sections; do not include information about how voters can rectify mistakes; are too long or poorly written; or include unexplained technical terminology (Norden, Quesenbery, and Kimball 2012). Too often, ballot instructions that have been mandated by law use legal and technical terms that may be unfamiliar to voters (Norden et al. 2008).

In both 2008 and 2010, Florida’s Miami-Dade County ballot included an instructional section advising voters to “review the instructions provided to correct your ballot”; these instructions were a separate, three-page packet of instructions on how to correct ballot mistakes and did not tell voters what would happen if they failed to correct their mistakes (Norden, Quesenbery, and Kimball 2012). The county had an overvote rate 2.5 times higher than the rest of the state in 2008 and 5 times higher than the rest of the state in 2010 (Norden, Quesenbery, and Kimball 2012).

As shown in Figure 1, several Ohio counties included the unclear phrase “select the set of joint candidates” in their 2010 ballot instructions (Norden, Quesenbery, and Kimball 2012, 24). Consequently, these counties reported higher rates of overvotes in the gubernatorial contest (Norden, Quesenbery, and Kimball 2012). Cuyahoga County, for example, had over 2,000 uncounted gubernatorial overvotes (Norden, Quesenbery, and Kimball 2012).

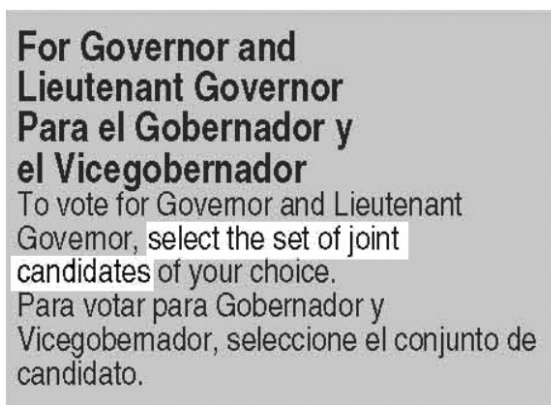
Overvoting can be prevented by electronic voting systems or optical scanners of paper ballots that notify voters when they mark too many candidates. However, these notifications often use language unfamiliar to many voters, such as “overvoted ballot,” as was the case in three

² As stated on North Carolina’s government website, there are more than 2,000 ballot designs used across the state (NC Gov n.d.). However, to view the state’s repository of sample ballots for upcoming elections, users must enter valid voter information so we were unable to review sample ballots.

Florida counties in 2008 and statewide in New York in 2010. Researchers estimated that about 20,000 voters' choices for Florida governor were not recorded, and 50,000 to 60,000 ballots went completely uncounted in New York (Norden and Iyer 2011).

Although Michigan election code permits use of the straightforward instruction “To Vote: Completely darken the oval opposite each choice as shown” in general elections, these instructions lack important information such as how to write in candidates or what to do if a voter makes a mistake. However, Michigan election code also permits ballots to use a longer form of instructions, as shown in Figure 2, that uses all capital letters and includes terminology such as “mixed ticket” that may inadvertently confuse voters.³

Figure 1. Ohio 2010 Election: Confusing Ballot Instructions



**For Governor and
Lieutenant Governor
Para el Gobernador y
el Vicegobernador**
To vote for Governor and Lieutenant
Governor, select the set of joint
candidates of your choice.
Para votar para Gobernador y
Vicegobernador, seleccione el conjunto de
candidato.

Caption: These instructions directed votes to “select the set of joint candidates,” an uncommon and confusing phrase that led to high rates of ballot error.

SOURCE: Norden, Quesenbery, and Kimball 2012, 24.

³ Michigan Election Law Act 116 of 1954, 169.736c. 1955.

<https://legislature.mi.gov/Laws/MCL?objectName=mcl-Act-116-of-1954>

Figure 2. Michigan Election Code: Long-Form Instructions

TO VOTE: Completely darken the box opposite each choice as shown: [insert graphic here].

IMPORTANT: To mark your ballot, use only a black or blue ink pen.

DO NOT USE ANY OTHER INK COLOR!

PARTISAN SECTION: To vote the partisan section of the ballot, you may cast a "mixed ticket."

Mixed Ticket: Vote for the individual candidates of your choice in each office.

NONPARTISAN and PROPOSAL SECTIONS of the ballot (if any) must be voted separately.

DO NOT vote for more candidates than indicated under each office title.

WRITE-IN CANDIDATES: To vote for a candidate whose name is not printed on the ballot, write or place the name of that candidate in the blank space provided and completely darken the voting target area. Do not cast a write-in vote for a candidate whose name is already printed on the ballot for that office.

CHECK BOTH SIDES OF BALLOT: This ballot has two sides. Be certain to check the reverse side of the ballot.

WHEN YOU HAVE COMPLETED VOTING: Place the ballot in the secrecy sleeve so that votes cannot be seen and, if there is a numbered stub, the numbered stub is visible. Return the ballot to the election official stationed at the tabulator. (If voting by absentee ballot, follow the instructions provided by the clerk for returning the ballot.)

NOTE: If you make a mistake, return your ballot to the election official and obtain a new ballot. Do not attempt to erase or correct any marks made in error.

Caption: Michigan election code permits ballots to use a longer form of instructions that uses all capital letters and includes terminology such as "mixed ticket" that may inadvertently confuse voters.

*SOURCE: Michigan Election Law Act 116 of 1954, 169.736c. 1955.
<https://legislature.mi.gov/Laws/MCL?objectName=mcl-Act-116-of-1954>*

Exclusion of Straight-Ticket Voting Option

Complete and clear ballot instructions are especially important on ballots that have straight-ticket voting options. Straight-ticket voting, also referred to as straight-party voting, allows a voter to select all of a single party's candidates by checking one box at the beginning of the ballot.

While several studies have found that straight-ticket voting lowers residual vote rates (Engstrom and Roberts 2020; Kimball, Owens, and Keeney 2004; Rempel and LaForge 2021), there is evidence that straight-ticket voting increases the rate of ballot roll-off in nonpartisan contests (Bonneau and Loepp 2013; Bonneau and Loepp 2014). Given nonpartisan contests tend to be listed at the end of ballots and straight-ticket voting does not select candidates in nonpartisan contests, Bonneau and Loepp (2014) hypothesize that voters who use straight-ticket voting may erroneously believe that they have voted in every race on the ballot.

Currently, seven states have straight-ticket voting options on their ballots (NCSL 2024a). In the past, the number of states offering this option was considerably higher. Thirteen states have abolished straight-ticket voting since 2000, including North Carolina, Pennsylvania, and Wisconsin in recent years, although Wisconsin still permits voters to whom the Uniformed and Overseas Citizens Absentee Voting Act applies to use the option (NCSL 2024a).

After the Michigan state legislature passed a law abolishing straight-ticket voting in 2016, a court decision placed a preliminary injunction on its elimination after finding that it would result in longer lines, lower turnout, and increased ballot roll-off and would have a disproportionately negative effect on Black voters (Engstrom and Roberts 2020; NCSL 2024a). Two years later, an appeals court decision ordered that straight-ticket voting's abolishment move forward before the 2018 general election (Engstrom and Roberts 2020; NCSL 2024a). However, in that election, the only election without straight-ticket voting, nearly 67 percent of Michiganders voted in favor of its reinstatement with a constitutional amendment (Engstrom and Roberts 2020; NCSL 2024a).

Ballot roll-off rates were generally higher in Michigan in 2018 than in 2014 and 2016 (Engstrom and Roberts 2020). Moreover, Engstrom and Roberts (2020) theorized that many voters who had used the option in the past cast incomplete ballots in 2018. Furthermore, the most significant changes in ballot roll-off rates were in counties where historical straight-ticket voting usage had been highest, apparently supporting the theoretical expectation (Engstrom and Roberts 2020).

In 2013, North Carolina passed a law eliminating straight-ticket voting. Before its abolishment, straight-ticket voting had been popular among voters. Over 1 million voters, or 43.6 percent, in the 2010 midterm election and over 2.5 million, or 57.2 percent, in the 2012 general election used straight-ticket voting (Engstrom and Roberts 2020). Importantly, it was particularly popular in counties with higher concentrations of people of color and counties with higher levels of Democratic party voting (Engstrom and Roberts 2020).

Researchers have found that removing straight-ticket voting from ballots can result in longer wait times, presumably because voters take longer to mark their ballots (Engstrom and Roberts 2020; Spencer and Markovits 2010). These delays tend to fall disproportionately on voters of color. Relatedly, there is some evidence that the removal of straight-ticket voting may drive down voter turnout because of longer lines and wait times which increase the cost of voting, especially on traditionally marginalized voters (Engstrom and Roberts 2020).

Failure to Differentiate between Sections and Contests

When paper ballots and electronic voting machines fail to effectively differentiate between ballot sections, such as by clearly separating instructions from contests or failing to denote the separation between different races, voters are more likely to unintentionally skip races and thus undervote (Jefferson 2007; MIT 2023; Norden, Quesenbery, and Kimball 2012). An example of a failure to properly differentiate between instructions and a contest is shown in Figure 3.

More than 14,000 voters in Sarasota County, Florida, did not make a choice for the district's 2006 US House of Representatives contest when the county's touch-screen ballot failed to clearly differentiate between the gubernatorial and congressional races (Norden, Quesenbery, and Kimball 2012). Importantly, more than 238,000 votes were cast in this congressional contest, and the winner had fewer than 370 votes more than the loser (Jefferson 2007). While Sarasota had a 13.9 percent residual vote rate, the neighboring county had a 2.5 percent rate (Norden, Quesenbery, and Kimball 2012).

When one senatorial contest listed on the ballot in East St. Louis, Illinois in 2008 did not have a section header, about 1 in 10 voters failed to have their votes recorded for US senator, mostly due to undervoting, not overvoting or ballot roll-off (Norden, Quesenbery, and Kimball 2012). By listing instructions and a senatorial contest in a single column, Florida’s Broward County 2018 paper ballots did not clearly differentiate between the two, resulting in a 9 percent voting rate difference from the rest of the state (MIT 2023).

Higher percentages of undervoting have also been observed when electronic voting machine ballots fail to differentiate clearly between contests, as shown in Figure 4. Some jurisdictions in Georgia’s 2018 midterm election used electronic ballots that listed more than one contest on the same screen; this resulted in fewer votes being cast for the lieutenant governor contest than for governor or secretary of state (MIT 2023).

Figure 3. Example of Failure to Differentiate Between Instructions and Contest

BC Ballot Design Problem No. 1

Contests placed in the same column as instructions

The Problem

Vertical instructions share column space with contests.

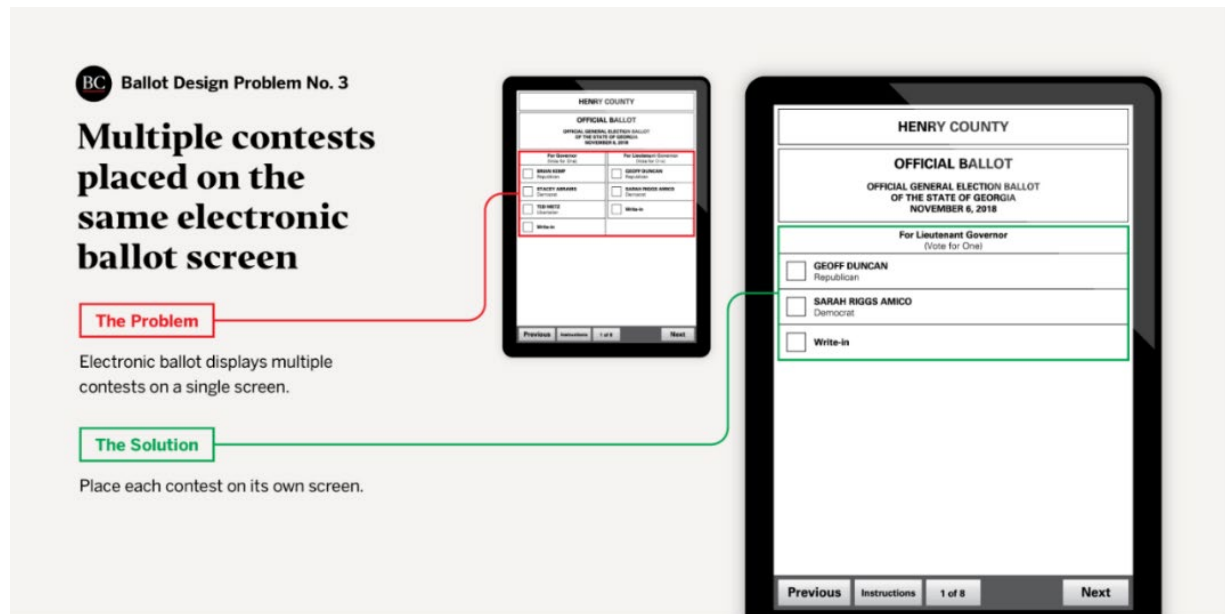
The Solution

Run the instructions horizontally, above and separate from the contest data.

The figure displays two ballot designs side-by-side. The left design, titled 'Ballot Design Problem No. 1', shows a column of vertical instructions followed by a column of contests, with a red box highlighting the first contest. The right design, titled 'Official General Election Ballot', shows horizontal instructions at the top, followed by a grid of contests, with a green box highlighting the first contest.

Caption: The first ballot lists the instructions vertically and places the first contest directly afterward, in the same column. This can lead to undervoting. The corrected ballot lists the instructions horizontally at the top of the ballot, separate from candidate lists. SOURCE: Cordova McCadney, Norden, and Quesenbery 2020.

Figure 4. Example of Multiple Contests on the Same Electronic Ballot Screen



Caption: Showing multiple contests on the same screen on electronic ballots can lead to undervoting as voters unintentionally skip contests. Instead, electronic ballots should place one contest on the screen at a time.

SOURCE: Cordova McCadney, Norden, and Quesenbery 2020.

Splitting Contests

Split contests divide candidate lists between two columns or two pages, a design flaw that has been shown to increase the number of undervotes (Norden et al. 2008) and/or overvotes (Cottrell et al. 2022; Kimball and Kropf 2017; Norden, Quesenbery, and Kimball 2012; Quesenbery 2016) as voters wrongly assume the split contest is a new, separate race. An example of a split contest is shown in Figure 5. Some states, including California, allow split contests.⁴

Ten Ohio counties had ballots that split the 2008 presidential contest into two columns. Research found a statistically significant difference between those 10 counties and the rest of the state in the number of residual and uncounted votes (Norden, Quesenbery, and Kimball 2012). On average, the residual vote rate for these 10 counties was 1.9 percent, compared to 1.2 percent in the 23 other counties (Norden, Quesenbery, and Kimball 2012).

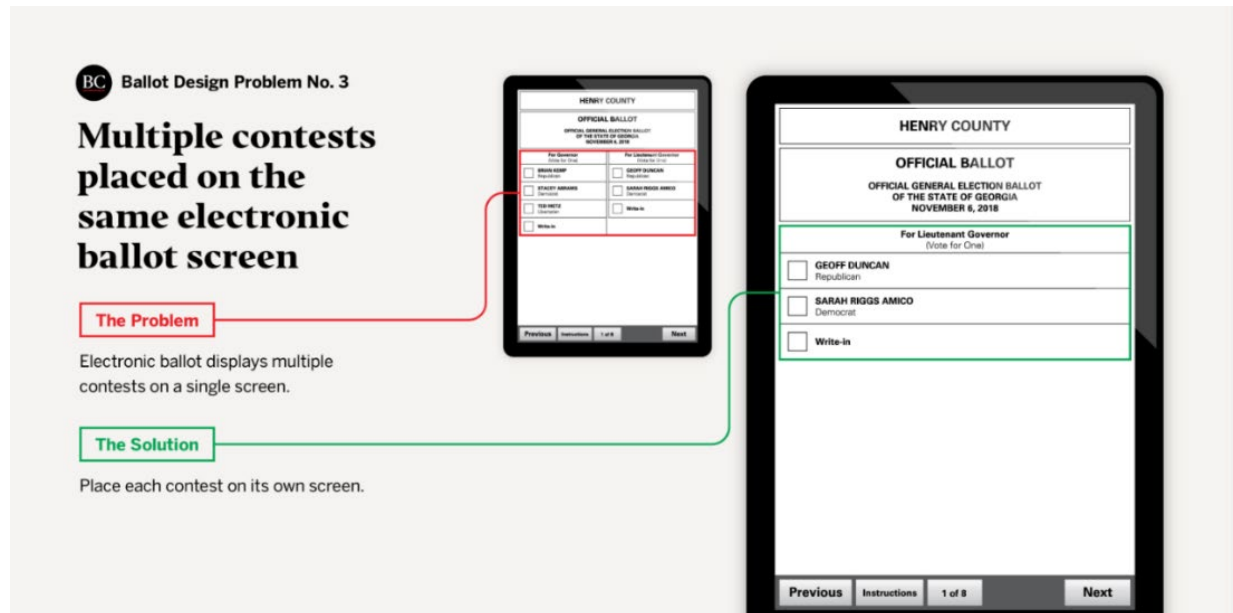
After Senator Barbara Boxer of California retired in 2016, 34 candidates ran to fill her open seat (MIT 2023). Given the large number of candidates, most local officials split the contest into two columns, causing 2.8 percent of ballots to go uncounted due to overvoting (Quesenbery 2016). Overvote rates were significantly higher in California counties that split

⁴ California Election Code, Chapter 920 § 2 (1994). https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=ELEC&division=13.&title=&part=&chapter=3.&article=2

the contest (3.6 percent) than in counties that used a single column (0.8 percent) (Kimball and Kropf 2017).

After observing an unusually high rate of residual votes in Gwinnett County in Georgia’s 2020 general election, researchers identified the county’s two-column ballot design as the likely reason that about 4,200 voters selected too many candidates in a senatorial special election contest (Cottrell et al. 2022).

Figure 5. Example of a Split Contest



Caption: Split contests divide candidate lists between two columns or two pages, a design flaw that has been shown to increase the number of undervotes and/or overvotes as voters wrongly assume the split contest is a new, separate race. Instead, ballots should keep contests in a single, continuous column.

SOURCE: Cordova McCadney, Norden, and Quesenbery 2020.

Confusing Wording of Ballot Measures

Ballot measures are issues or laws—such as referenda, initiatives, recalls, or constitutional amendments—that are placed on state or jurisdictional ballots to be approved or rejected by voters (CSG 2023). These tools of direct democracy, however, can be delegitimized if voters are unable to fully comprehend ballot measures’ content and, consequently, do not accurately vote their preferences or do not vote on the given issues due to their complexity.

Ballot questions often use legal and technical language that can be difficult for voters to understand (Reilly and Richey 2009). In an analysis of over 1,000 ballot questions from 1997 to 2007, Reilly and Richey (2009) found that their average readability is over most voters’ reading levels, potentially casting doubt on direct democracy measures’ legitimacy (2009). Ballot question complexity increases ballot roll-off, and voter error (Mondak 1994; Reilly and Richey 2009).

Poorly Designed Mail-In Ballots

The growing number of voters relying on absentee and vote by mail makes the design of such ballots more crucial than ever. Already steadily rising since the early 2000s, the percentage of voters who mailed in their ballots hit 43 percent in 2020 (Census 2021), partially because the number of states offering vote by mail doubled from 2018 to 2020 amidst the COVID pandemic (EAC 2021). Across racial groups, nontraditional voting (voting early or by absentee ballot) is exceedingly popular—over 65 percent of non-Hispanic White, Black, Asian, and Hispanic voters reported using nontraditional voting in 2020. In fact, Asian and Hispanic voters had the highest rates of nontraditional voting at 82.4 percent and 76.7 percent, respectively (Census 2021).

Unfortunately, mail-in ballots can be rejected or need to be cured because of voter error. In 2016, about 1 percent of the total 140,114,502 ballots returned nationally were rejected (EAC 2017). Of that 1 percent, 20 percent were uncounted because of missing ballot envelope signatures (EAC 2017). In 2020, about 0.79 percent, or 560,826, of mail ballots were rejected, with a little over 12 percent of those rejected because of missing ballot signatures (EAC 2021).

Research suggests that the design of mail ballots and ballot envelopes can affect the number of voter errors. Ballot envelopes are just one mail ballot design element that can increase errors. In Minnesota’s 2008 election, a year when one senatorial race’s margin of victory was only 312 votes, a little more than 3,900 absentee ballots were uncounted because of unsigned envelopes (Norden, Quesenbery, and Kimball 2012). In response to the high number of errors, Minnesota’s Secretary of State office collaborated with the Usability in Civic Life organization to redesign both the ballot envelope and voting instructions, resulting in fewer ballots rejected due to missing signatures in the 2010 election (Norden, Quesenbery, and Kimball 2012).

In 2018, Georgia’s Gwinnett County absentee ballots had a slew of design issues. First, signature lines on ballots were not clearly marked with an X or box to alert voters to where they were required to sign. Instructions used the phrase “signature or mark of the elector,” which confused some voters, and the ballots had inconsistent formatting, ultimately leading to markedly high rejection rates (MIT 2023). The Brennan Center for Justice estimated that the county rejected nearly 1,700, or about 21 percent, of the total 7,512 mail ballots rejected in Georgia in 2018 (Córdova, Norden, and Quesenbery 2020; EAC 2019a).

While Pennsylvania’s in-person ballot designs are subject to local discretion, the Pennsylvania Department of State (PDOS) has issued universal absentee ballot design guidelines that include illustrations, layout, fonts guidance, and materials in multiple languages (PDOS 2024). In Pennsylvania, 17,000 mail-in ballots, or about 2.8 percent of the total number of mail-in ballots cast in the 2023 primary election, were rejected and went uncounted (PA Pressroom 2023). Ballots were uncounted for a myriad of reasons, including arriving after election day, missing dates or signatures, incorrect dates, or lack of a secrecy envelope (PA Pressroom 2023). In response, election administrators redesigned mail-in ballot envelopes, rewrote the instructions, and made other design alterations to reduce voter error in 2024 elections (PA Pressroom 2023). The redesigned envelope is shown in Figure 6.

Figure 6. Pennsylvania Redesigned Absentee Ballot Envelope

Before you complete this side!

1. Seal your ballot in the yellow envelope that says "Official Election Ballot."
2. Then seal that envelope inside this envelope.

Voter's declaration

I am qualified to vote the enclosed ballot and I have not already voted in this election.

If I am unable to sign without help because I have an illness or physical disability, I have made my mark or somebody has helped me make my mark.

Sign and date

Sign or mark here (REQUIRED)

X

Today's date here (REQUIRED)

				2	0		
Month	Day			Year			

For your witness only

If you have an illness or physical disability that prevents you from signing, have your witness complete this section.

Witness, sign here

Witness address

Street _____

City _____ Zip _____

For county election use only

Caption: After a high percentage of ballot rejections due to voter error, Pennsylvania's Department of State redesigned the absentee ballot envelope and ballot.

SOURCE: PA Pressroom 2023.

There is some evidence that the ballot redesign effectively lowered rejection rates across counties. According to Pennsylvania Secretary of the Commonwealth Al Schmidt, there was a 13.5 percent drop in the number of mail ballot rejections due to incorrect dates, missing dates or signatures, or absence of a secrecy envelope in the 2024 primary compared to the 2023 primary, which Schmidt directly attributed to the ballot redesign (Levy 2024). Of more than 714,000 returned mail ballots, 7,906, or 1.11 percent, were rejected for date, signature, or envelope associated errors (Levy 2024). In comparison, 1.32 percent, or 8,123, of the 613,743 ballots returned in 2023 were rejected for similar errors (Levy 2024). These changes are especially important given that a 2024 court decision, which is being actively challenged by civil rights groups, ruled that Pennsylvania local officials are not required to count undated or misdated ballots (Lo Wang 2024).⁵

The PDOS advised local election officials to count ballots “if the date written...can reasonably be interpreted to be ‘the day upon which [the voter] completed the declaration.’” (Walker 2024). Even so, officials in some counties chose to reject such ballots while others followed Deputy Secretary of Elections Jonathan Marks’s guidance (Walker 2024). Officials in Allegheny County, which had been rejecting ballots with dating errors, changed their process after receiving the department email (Walker 2024). Finally, in July 2024, the PDOS directed counties to print full-year dates on mail ballot envelopes to further reduce the number of ballots needing curing and/or rejected (Seizer 2024).

Given the prevalence of “nontraditional” voting methods, such as voting by mail, especially among historically marginalized voters, design errors threaten the accuracy, fairness, and legitimacy of our elections and, by extension, our democracy. However, in addition to the obstacles facing voters who use mail voting, voters who decide to vote in person also face barriers to casting a ballot successfully.

Recommendations

As illustrated by the examples above, unclear and unnecessarily complicated ballot instructions have tangible consequences in our elections, leading to voter confusion, errors, over- and undervoting, and, ultimately, disenfranchisement. Fortunately, there are ways election officials and administrators can address these common mistakes to make voting and ballots more equitable.

For example, state and local officials should follow the US Election Assistance Commission (EAC) list of 10 polling place material design guidelines shown in Box 1 (2022a). Some states have election laws that directly conflict with the EAC guidelines, such as requiring section headings to be printed in all capital letters, and some states’ instructions are established by law

⁵ *The 2024 judicial ruling concerning undated and misdated ballots could have a disproportionately negative impact on historically marginalized communities. An analysis of absentee rejections in the 2022 midterm election in three Pennsylvania counties found that flawed mail-in ballots were more likely to come from districts with higher concentrations of people of color (Walker 2022). In Allegheny County, for example, voters who submitted flawed ballots were about 6 percent more likely to come from a zip code with a higher concentration of people of color (Walker 2022).*

Box 1. Designing Polling Place Materials: Top 10 Election Design Guidelines

- 1. Use lowercase letters**
Lowercase letters are more legible than ALL CAPITAL LETTERS because they are easier to recognize.
- 2. Avoid centered type**
Left-aligned type is more legible than centered type, which forces the eye to stop reading in order to find the start of the next line.
- 3. Use big enough type**
“Fine print” is hard to read and may intimidate or alienate voters. Use minimum type sizes: 12-point for optical scan; 25-point for touchscreens. (Following this principle for optical scan ballots may impact printing costs but will be a worthwhile investment in election accuracy.)
- 4. Pick one sans-serif font**
Avoid introducing new fonts, which require the eye to stop reading and adjust. Sans-serif fonts with clean strokes (Arial, Helvetica, Univers, Verdana) are recommended for screen and for the quantity and variation of text found on paper ballots. For dual-language materials, use bold text for the primary language, regular text for the secondary language.
- 5. Support process and navigation**
For optical-scan ballots, offer comprehensive instructions and page numbering. For touchscreen ballots, offer language and mode options, continuous access to instructions, consistent and flexible navigation and clear feedback about selections. Post notable wayfinding and instructional materials in and around the polling place.
- 6. Use clear, simple language**
State instructions and options as simply as possible. Summarize referenda in simple language alongside required formats. Do not include more than two languages on any one material.
- 7. Use accurate instructional illustrations**
Visual instructions help low-literacy and general-population voters. Photo images, which are difficult to shoot and reproduce well, are not recommended. Illustrations must be accurate in their details to avoid misleading voters.
- 8. Use informational icons (only)**
Avoid political party icons. Icons that call attention to key information and support navigation are recommended in limited use.
- 9. Use contrast and color functionally**
Use color and shading consistently: on optical scan ballots, to differentiate instructions from contents and contests from each other; and on touchscreen ballots, to support navigation, call special attention and provide user feedback. Color cannot be relied on as the only way to communicate important information.
- 10. Decide what’s most important**
Page and screen layout and text sizes should support information hierarchy. For instance, the ballot title should be more prominent than any one contest, a contest header should be more prominent than its candidates’ names and a candidate’s name should be bolder than his/her party affiliation. Candidates’ names and options should be presented with equal importance.

Source : EAC 2022a.

and do not comply with the EAC guideline of using plain, clear language (Groeger 2016). We also recommend that ballots have horizontal voting instructions that are separated from vertical candidate lists. Instructions should use short, clear sentences with plain language and active voice, appear immediately before associated tasks, and be situated in the upper left-hand corner of the ballot (CCD 2020; Kimball and Kropf 2005; Norden, Quesenbery, and Kimball 2012; Schur et al. 2024).

Moreover, instructions should include information about how to write in candidates where applicable, how to fix mistakes, and the consequences of spoiled ballots (CCD 2020; Kimball and Kropf 2005; Norden, Quesenbery, and Kimball 2012). Similarly, we recommend that instructions effectively describe how straight-ticket voting works and that states reinstitute or keep straight-ticket voting options on ballots. Instructions for electronic ballots should include how to start the voting process and how to change candidate selections (CCD 2020). Finally, all ballot content, including both instructions and ballot measures, should be written at the eighth-grade reading level to facilitate the highest levels of voter comprehension (Reilly and Richey 2009; Bryant et al. 2023). For example, Michigan law requires that ballot language be “clearly written using words that have common everyday meaning to the general public.”⁶

Additionally, contests should not be split and, instead, candidate names should be listed in one continuous column on paper ballots (CCD 2020; Norden, Quesenbery, and Kimball 2012), with each candidate’s name in a separate box. Electronic ballots should list one contest on the screen at a time (CCD 2020), with all contest candidates listed on the screen at one time when possible. Ballots should effectively use headings, contrast, bolding, and shading to clearly differentiate between contests (Kimball and Kropf 2005).

Evidence indicates that voting technology that plainly notifies voters they have over- or undervoted can lower residual vote rates and reduce racial inequities (Knack and Kropf 2003; Knack and Kropf 2005; Tomz and Van Houweling 2003). We therefore recommend the use of such technology, with the addition that voters are also alerted that their votes will go uncounted if they do not fix their ballots. Voters should be able to change electronic ballots’ language, text size, and contrast levels at any point in the voting process (Norden, Quesenbery, and Kimball 2012).

Mail ballot envelopes should clearly indicate sections voters need to fill out, including where to place signatures and dates, through the strategic use of coloring, bolding, and/or an X. Furthermore, voter signature lines should use plain language and avoid using potentially confusing terms such as *elector*. Finally, mail ballots that use secrecy envelopes in addition to return envelopes should include instructions with graphics indicating the order of envelope placement, as is now the case in Pennsylvania (PA Pressroom 2023).

To ensure that these design recommendations are effectively implemented, state and local officials should conduct preelection usability tests before elections are held, the results of which should be released to the public, to identify mistakes or ballot architecture that contribute to voter errors (CCD 2018; EAC 2013; Norden et al. 2008; USAEE n.d.). Several organizations, such as the EAC (2013), the Center for Civic Design (CCD) (2018), the Brennan Center for Justice (Norden et al. 2008), and the US Alliance for Election Excellence (USAEE

⁶ *Michigan Election Code. MCL § 168.485.*

n.d.) provide detailed usability testing planning resources for election officials, and some states already make usability tests a regular part of the election process.

If local election officials lack the capacity or resources to conduct usability tests before every election, we recommend tests be run to assess ballot design, voting system changes, and new accessibility practices before alterations are made to the voting process (USAEE n.d.). Also, before ballot design is finalized, local officials should hold public hearings and/or a public comment period of at least 14 days for local community members and groups to provide feedback. Finally, election officials should also use information collected as part of postelection audits to identify any high rejection and voter error rates to determine whether election materials require redesign.

As shown in Minnesota, New York, and Pennsylvania, ballot redesigns can reduce voter errors and ensure every voter's ballot is counted. The above evidence-based recommendations are actionable steps that can address ballot design issues and improve ballot design for all voters.

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Language Accessibility

Language inaccessibility is a significant barrier to full participation in election processes for a growing number of citizens, threatening the quality of our democracy (Barry 2002; Cabrera 2022). Since 2000, the number of naturalized voters has increased by 93 percent, and in 2020 an estimated 23.2 million naturalized citizens were eligible to vote (Budiman, Noe-Bustamante, and Lopez 2020; Cilluffo and Fry 2019). Naturalized citizens' voter turnout rate is lower than native-born voters'. In the 2020 general election, turnout of naturalized citizens was 60.8 percent, compared to 67.4 percent of native-born voters (Census 2021).

In 1975, Congress amended the VRA to include Section 203, which states,

Whenever any State or political subdivision [covered by the section] provides registration or voting notices, forms, instructions, assistance, or other materials or information relating to the electoral process, including ballots, it shall provide them in the language of the applicable minority group as well as in the English language (DOJ 2023).

Election materials and resources covered by Section 203 include: voter application and registration forms, mail-in/absentee ballots, sample ballots, provisional ballots, paper ballots, electronic ballots, voter guides, polling place materials, government websites, social media, interpreters and bilingual poll workers, and other informational and instructional materials about registration, upcoming elections, and absentee voting (PDOS 2023). Moreover, Section 203 defines protected language subdivisions as populations that make up 5 percent or more of the total voting age population (as estimated by the most recent census) in a county, township, or municipality who “are members of a single language minority group, have depressed literacy rates, or do not speak English very well” (DOJ 2023). The US Department of Justice (DOJ) maintains lists of states' protected language subdivisions and which languages election materials must include (DOJ 2021). Currently, 30 states have jurisdictions covered by Section 203 (DOJ 2021). Importantly, experts argue that the census likely underestimates the number of voters with LEP (Census 2022), and the limited racial classifications included on the census hinder language access efforts (Hapgood 2024).

Berks, Lehigh, and Philadelphia counties in Pennsylvania have protected language subdivisions. All three must translate election materials into Spanish, while Philadelphia must also provide Chinese and Taiwanese translations (DOJ 2021). In Michigan, Clyde township, Covert township, Fennville city, and Hamtramck city are required to provide translated election materials (DOJ 2021). The first three jurisdictions are required to provide materials in Spanish, while Hamtramck is required to translate materials into Bangladeshi (DOJ 2021). The PDOS mandates that Section 203 designated counties use professional translators to ensure election material translation accuracy and recommends community input and review of provided translations (PDOS 2023).

Notably, while not requiring such, the PDOS does recommend counties with “sizable populations of eligible voters who primarily speak a language other than English” (i.e., counties with substantial populations with LEP that do not meet the VRA 5 percent threshold) implement the same practices (PDOS 2023). In 2020, an estimated 111,000 eligible

Pennsylvania voters with LEP lived in communities that did not meet the 5 percent threshold (Previti 2020).

A healthy and high-quality democracy requires that all eligible voters, regardless of language or disability, have equal access to voting. Evidence shows that providing translated election materials positively affects voter participation for minority communities (AAJC 2018). Examples of the positive benefits of Section 203 compliance include higher Latino registration rates (Fraga and Merseeth 2016; Jones-Correa 2005; Parkin and Zlotnick 2014), higher Latino turnout (Jones-Correa 2005; US House 2006; Hopkins 2011), higher Asian American registration rates (Tucker 2009), higher Asian American turnout (Fraga and Merseeth 2016), higher Native American and Alaska Native turnout (US House 2006), and increased Latino, Asian American, and Native American descriptive representation (US House 2006).⁸Overall, research suggests that the longer local jurisdictions are covered under Section 203, with federal observers who monitor compliance, the more likely they are to increase descriptive representation (Marschall and Rutherford 2016).

Unfortunately, some jurisdictions with Section 203 populations fail to comply fully with federal requirements, leading to a long series of DOJ litigation cases dating back to 1979 (DOJ 2024a). One analysis found that one in seven Section 203 jurisdictions failed to provide voter registration materials in required languages and one in four failed to have bilingual staff members (Jones-Correa and Waismel-Manor 2007).

Recommendations

As a report by Asian Americans Advancing Justice argues, the VRA's language provisions should be considered minimum requirements and local election officials' language accessibility practices should extend beyond current federal mandates (AAJC 2018). Luzerne County, Pennsylvania, for example, has a sizable and growing Latino population that does not meet the federal 5 percent threshold, so the county is not required to, and does not, provide all election materials in Spanish or provide any information on language access accommodations on its county website (AAJC 2018; LC n.d.).

Some states and counties have already chosen to lower population thresholds. California and Colorado law requires language assistance in precincts with 3 percent of voting-age citizens with LEP. California's statute further mandates that precincts not meeting the 3 percent threshold but "where stakeholders can otherwise demonstrate...the existence of a significant local need for materials and assistance in languages other than English" must also provide language assistance (AAJC 2018, 7). These voluntary extensions of Section 203 can yield positive outcomes for covered populations. After San Diego County voluntarily provided election materials in Vietnamese, Vietnamese registration increased by 40 percent (AAJC 2018; DOJ 2005).

Therefore, we recommend that state and local election officials voluntarily provide language assistance if, according to the US Census, at least 3 percent of their voting-age populations possess LEP. Moreover, since Section 203 coverage is limited to certain languages, counties and precincts with significant populations that speak a language other than those covered should provide language assistance in those languages (AAJC 2018). For example,

⁸Pitkin (1967) defines descriptive representatives as those who "resemble" the people they represent.

Pennsylvania's Philadelphia County provides voter registration materials in Russian and French, two languages not covered (AAJC 2018; PCC n.d.).

The VRA's Section 208 gives the right to voters who are blind, have a disability, or are unable to read or write to have someone of their choice assist them during the voting process. We recommend that election officials abolish restrictions to and expand this Section 208 right to cover those with LEP or who speak English as a second language (AAJC 2018; DOJ 2023). Importantly, Section 208, unlike the language provisions in Section 203, applies to every jurisdiction and would aid voters with LEP everywhere (DD 2022). Several states, including California and Arizona, allow all voters to have assistance from a person of their choice regardless of disability or literacy (AAJC 2018).

Other states have instituted policies that restrict voters' right to assistance. Among the state-level policies that restrict Section 208 are limitations on the amount of time a voter can spend in the voting booth, who can provide voting assistance, and even the number of voters one person can assist (AAOP n.d.; Lee, Minnis, and Hum 2014). In Michigan, voters can get assistance from election inspectors or another person of their choice as long as that person is not the voter's employer or an agent or representative of the voter's labor union (MSOS 2024).

Election offices often struggle to efficiently and effectively identify voters who need language accommodations (LaVine and Jarboe 2019). To help accomplish this goal, California's voter registration applications give voters the option to provide information about their language preferences for election materials, which may allow election offices to estimate the number of LEP voters in their jurisdictions (CSOS 2022). In addition, this language preference section also has a spot for applicants to volunteer to be poll workers (CSOS 2022). We recommend that states add similar questions to their voter registration forms.

Voter and community outreach is essential to develop, implement, and assess language accessibility policies effectively (DOJ 2023; EAC 2019b). Election officials should, for example, work with local groups to check the accuracy of translated materials and that translations correspond to local dialects (CCD 2022; DOJ 2023; EAC 2019b). Like errors on English language ballots, translation errors can confuse voters, lower public trust in election processes, and decrease public participation (CCD 2022).

An illustrative example of the incorporation of voters with LEP and community organizations in the development of language accessibility policies is Philadelphia's project to design more accessible mail-in ballots and voter guides (Dragoman, Menon, and Eusebio 2022). Partnering with five community organizations, including Citizens for Language Access and the Coalition of African and Caribbean Communities, and a sample of 39 voters with LEP, officials in the Office of Immigrant Affairs sought to clarify information about how to apply for and complete mail ballots (Dragoman, Menon, and Eusebio 2022). In collaboration, officials tested the usability of and finalized ballots and education materials over a period of about three months in 2020 (Dragoman, Menon, and Eusebio 2022).

Another way to incorporate voters with LEP into the process is by conducting preelection usability tests with them. The CCD (n.d.) has multiple resources for election administrators regarding language accessibility in elections, including a guide for conducting multilingual usability tests, and the EAC (2024a) maintains a glossary of common election terminology in 20 languages. In addition to preelection usability tests, election officials should conduct

postelection procedural audits to assess the implementation of language accessibility policies (CCD 2022).

Finally, we recommend that state governments and state election officials designate more resources to training officials, administrators, and workers on language access and improving language accessibility practices; this may include creating offices and positions dedicated to language accessibility work, recruiting more bilingual poll workers, and spreading awareness of current language accessibility accommodations available to voters (AAJC 2018). According to the CCD (n.d.), language access committees should be formed to develop and implement outreach strategies for various communities. California's Secretary of State (CSOS), for example, advises local election officials create Language Accessibility Advisory Committees to provide expertise, promote accessibility practices, and respond to the questions of secretaries of state regarding language accessibility (CSOS 2023). The CSOS (2023) published a toolkit with information on how other states can form and staff such committees.

Disability Accessibility

Ballot and polling place materials are also inaccessible to many voters with disabilities.⁹ Rutgers University researchers estimate that there are more than 38 million eligible US voters with disabilities, such as mobility impairment, cognitive impairment, hearing impairment, and visual impairment (Schur and Kruse n.d.). In the 2020 presidential election, 17.7 million people with disabilities voted (Schur and Kruse n.d.). Such voters are protected by the Americans with Disabilities Act of 1990 (ADA), which requires that “people with disabilities have full and equal opportunity to vote,” and the Help America Vote Act of 2002 (HAVA), which mandates that at least one accessible voting system is available for people with disabilities at every polling location (DOJ 2024b).

Despite these laws, research has consistently found that disparities in voter turnout and voter experiences between voters with disabilities and those without persist (Johnson and Powell 2019; Kuhlmann and Lewis 2022; Matsubayashi and Ueda 2014; Schur, Ameri, and Adya 2017; Schur and Kruse 2021; Schur et al. 2024). After controlling for age, voters with disabilities were 7 percent less likely than voters without to cast a ballot in the 2020 presidential election (Schur and Kruse 2021). Fourteen percent of voters with disabilities reported difficulties voting in 2022 and were three times more likely than those without to say so (Schur et al. 2024).

Among voters with disabilities, those who voted in-person and those with vision and cognitive impairments had the highest levels of difficulty—5.9 percent of in-person voters reported having trouble reading or seeing the ballot in 2022, with some reporting that ballots had words with which they were unfamiliar (Schur et al. 2023; Schur et al. 2024). Specifically, Schur et al. (2023) note that ballot design features that made it difficult for people with disabilities were text size, line spacing, unclear differentiation between contests, vertical positioning, and ballot line length.

Because voting by mail allows citizens with disabilities to avoid common in-person barriers to exercising their right to vote, it is the most common voting method among voters with disabilities (ACLU 2020; Schur and Kruse 2021). At least two studies, analyzing elections between 1980 to 2020, suggest that voting by mail increases the number of people with disabilities who vote and decreases the turnout gap between voters with disabilities and voters without (Matsubayashi and Ueda 2014; Kuhlmann and Lewis 2022). Despite the advantages of mail voting for people with disabilities, online applications to vote this way are largely inaccessible.

At least 19 states, including Michigan, Pennsylvania, and Wisconsin, offer online portals to request an absentee/mail ballot (NCSL 2024b). However, a 2020 study examining government websites that provide election information found that 43 states had mail-in ballot application web pages with at least one “critical fault” that made them inaccessible to voters with disabilities (Abrams 2020). On average, states had 10 critical accessibility issues (Abrams 2020). Some states require that mail-in applications and ballots be sent via mail, but these applications and ballots are frequently incompatible with accessibility technology (Root and Ives-Ruble 2021; NCSL 2024b). These inaccessibility issues make it notably harder for people

⁹ This report focuses not on access to polling locations but rather access to ballots themselves.

with disabilities to vote. An EAC survey found that voters with disabilities were over twice as likely as those without to report difficulties voting by mail (Schur and Kruse 2021).

As a result of a lawsuit brought against the PDOS by the Pennsylvania chapter of the National Federation of the Blind, the state began providing an accessible vote by mail system, using the OmniBallot platform by Democracy Live, the most commonly used online balloting portal in the country (VV n.d.). OmniBallot will be used statewide in Illinois, Indiana, New Jersey, Pennsylvania, Vermont, and Washington, as well as in several jurisdictions in Florida and Texas in the 2024 election (VV n.d.)

Omniballot allows voters with disabilities to mark their ballots electronically and provides a platform that is an “ADA-compliant, audio-enabled, multilingual accessible ballot marking system allowing voters with disabilities to mark their absentee ballots without requiring assistance.” The Omniballot platform is compatible with major screen reader programs and can be used on computers, tablets, and smartphones (DL n.d.).

Due to legitimate concerns regarding the relative security of online voting (VV 2020), Omniballots are encrypted and delivered to voters and returned through a secure, online portal hosted by the Amazon Web Service cloud, which has been certified by federal agencies (DL n.d.). Adding another layer of security, “the ballot that is counted and tabulated is one paper,” (DL n.d.). Despite these security measures, systems like Omniballot face criticisms for not providing a paper ballot receipt to voters and for the cybersecurity risks inherent in all online voting systems (VV n.d.).

Starting in 2020, Michiganders with disabilities can apply online for accessible absentee ballots, which can be completed at home on an electronic device and with the help of assistive technology. However, these ballots still must be printed out and returned by voters to election offices, which may be difficult for those with disabilities (MDOS n.d.).

Voters with disabilities in North Carolina can apply for, complete, and return accessible absentee ballots online (NCSBE n.d.a). The ballot is compatible with screen readers and permits voters and witnesses to sign electronically via a stylus, mouse, finger, or keyboard (NCSBE n.d.a). Additionally, voters can practice filling out and submitting a ballot before an election using the NC Absentee Demo Portal, but it should be noted that this demonstration does not show voters an actual ballot and instead uses fictional candidates to illustrate the voting process (NCSBE n.d.a).

Colorado, a state where nearly 70 percent of registered voters with disabilities voted in 2016, has undertaken expansive efforts to make voting more accessible that can serve as an example for election officials across the country. For instance, the state conducts accessibility audits and consults voters with disabilities and disability organizations after every election to evaluate how well accessibility standards were followed (Root and Ives-Ruble 2021). Moreover, county-level results of these audits are publicly released by the secretary of state. In 2015, state election officials worked with a disability activist organization to test new voting machines. Finally, Colorado’s implementation of mail voting and automatic voter registration has made it easier for voters with disabilities to participate in elections (Vasilgambros 2018).

Recommendations

Voters with disabilities should be included in every step of the ballot design process, including decisionmaking, testing, implementation, and assessment (EAC 2022b). Examples include Colorado's collaboration with voters with disabilities and disability groups and California's secretary of state's published guidelines for election officials, administrators, and workers to assist in disability accessibility preparation (CSOS n.d.).

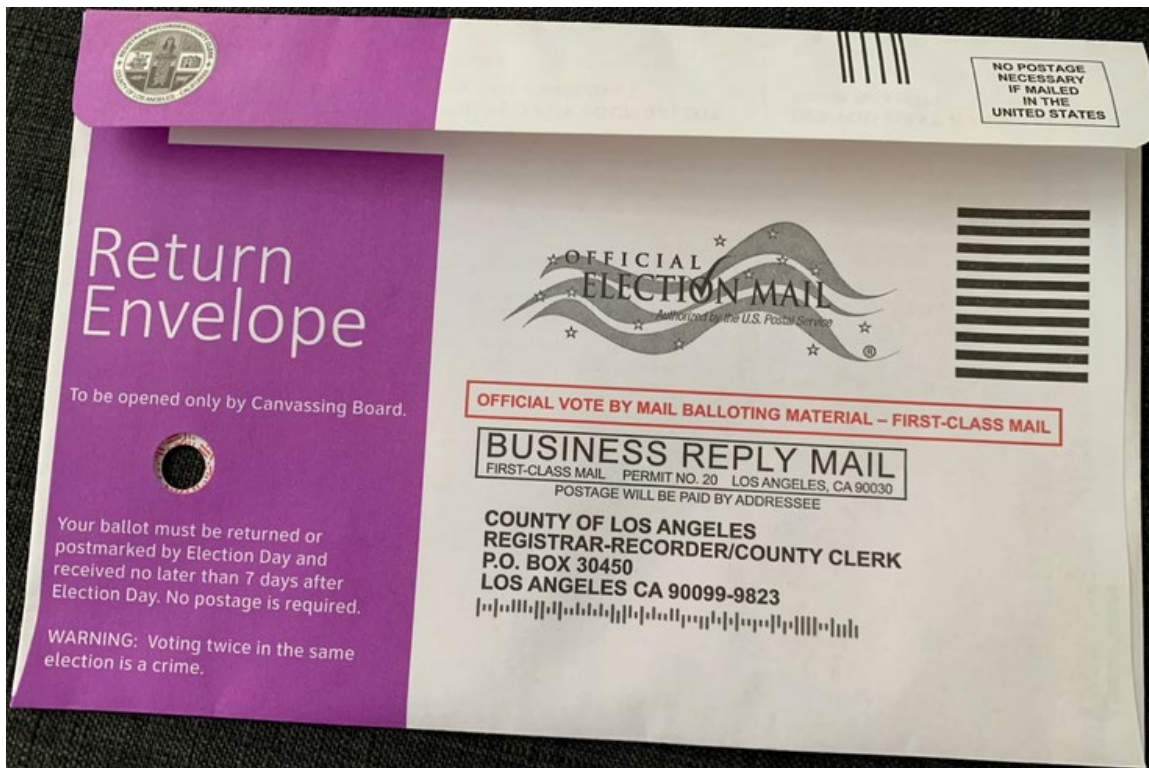
Experts generally argue that fewer voters with disabilities had difficulty voting in 2020 compared to 2012 thanks to increased use of electronic voting machines with features designed to help them cast their ballots (Schur et al. 2024). While HAVA requires every polling place to have at least one accessible voting machine, this should be considered the minimum. Often, one machine is insufficient (Root and Ives-Ruble 2021). Even when polling places are properly equipped with accessible technology, it may not be turned on or functioning properly, leading to longer wait times and delays for voters with disabilities (GAO 2017; Vasilogambros 2018). Polling locations should have a sufficient number of accessible machines to ensure that wait times for voters with disabilities do not exceed 17 minutes, the self-reported national average wait time for voters with disabilities in 2020 (Schur and Kruse 2021).

When determining the number of accessible voting machines available in a polling place, administrators should take into account census data on the potential number of voters with disabilities in that precinct. Schur and Kruse (2021) provide an example of how to estimate the number of eligible voters with disabilities using Census Bureau data. The Census Bureau collects disability data at the block, block group, tract, and congressional district levels that can be used to estimate the appropriate number of machines needed (Census n.d.). Moreover, just as California's voter registration forms permit voters to record their language preferences for election materials, it also has a section for applicants to request election materials in accessible format (CSOS 2022). We recommend that states implement a similar section on their voter registration forms so election offices can estimate the number of voters with disabilities in their jurisdictions.

Given the high rates of voters with disabilities who vote by mail, states should permit such voters to request mail-in ballots online and by telephone and allow voters to return mail-in ballots via fax, drop box, email, an online portal, or in person at election offices (ACLU 2020; EAC 2022c; NCSL 2024b). Furthermore, states should adopt permanent absentee voting for, at the very least, voters with disabilities; currently, 11 states do so and 8 more states, including Michigan and Wisconsin, permit any voter to make a single request to vote absentee in all future elections (NCSL 2024c).

Mail ballots should be available in a format other than paper, including electronic, in large print, and braille (EAC 2022c). States should also implement Remote Accessible Vote by Mail systems that are compatible with popular screen reader technologies and other disability accessibility software (ACLU 2020). Any instructional illustrations should include alternative text captions so that assistive technology can properly communicate ballot information to voters (EAC 2022c). Finally, ballot envelopes should incorporate accessibility features such as tactile indicators on signature lines; one example is holes for voters with vision impairments or blindness as provided in the Los Angeles County 2024 primary election (see Figure 7) (EAC 2022c; Lee 2024).

Figure 7. Los Angeles County Accessible Mail Ballot Envelope



Caption: An example of a mail ballot return envelope with a disability accessible design.
SOURCE: Lee 2024.

Signature matching requirements tend to impact voters with disabilities negatively and disproportionately; states should make them more accessible (ACLU 2020; EAC 2022b). Similarly, mail ballots should have flexible identification procedures, and voter and witness signature options should be altered to be more accessible, such as by allowing voters to sign digitally or with stamps—as is permitted in Michigan¹⁰—or witness requirements should be waived entirely (ACLU 2020; EAC 2022c).

Election officials should consider the adoption of digital sign-in processes at polling places for voters. Signature requirements can pose difficulties for voters with mobility issues and/or who are blind or have low vision (EAC 2022c). EPBs that can scan photo IDs could benefit all voters by making the voting process more efficient and reducing the likelihood of long lines, which voters with disabilities reported as a top concern prior to the 2024 presidential election (Bryant et al. 2023; Hostetter 2022; Romero 2024; Stein et al. 2020).

More jurisdictions across the country are using EPBs. In 2018, 36 states used EPBs in at least one jurisdiction (NCSL 2019). Since 2019, at least 41 states and DC have authorized the use of EPBs through administrative action (NCSL 2019). Georgia, Michigan, North Carolina, Ohio,

¹⁰ Michigan Election Law. MCL § 168.500. <https://www.legislature.mi.gov/Laws/MCL?objectName=mcl-168-500>

and Pennsylvania are a few of the states where polling places are authorized to use EPBs (NCSL 2019). Though EPBs were in use there already, Michigan passed a law in 2018 that requires cities and townships to use the state's bureau of elections EPB software (NCSL 2019). North Carolina law allows EPBs to be used instead of or alongside paper poll books, but systems must be certified or developed by the North Carolina State Board of Elections (NCSBE) (EAC 2023; NCSL 2019). All jurisdictions use EPBs for early voting, while many employ them on Election Day (NCSL 2019). As of 2023, 25 of Pennsylvania's 67 counties used EPBs, including Philadelphia County (PDOS n.d.a; Meyer 2024).

Finally, local officials should conduct preelection accessibility tests and postelection accessibility audits (CCD 2018; Root and Ives-Rublee 2021; Schur et al. 2024). The CCD (2018) recommends that election officials reach out to local chapters of organizations such as the American Council of the Blind, United Cerebral Palsy, and the National Disability Leadership Alliance in order to ensure that they are meeting the needs of disability communities.

State and local election officials should implement measures to remove voting obstacles for those with disabilities. This includes allocating more resources to accessibility, as well as training officials, administrators, and workers on disability issues and how to properly assist voters with disabilities throughout the voting process. This has been shown to be vitally important, as a little more than 26 percent of voters with disabilities (compared to about 14 percent of all voters) cited assistance from election workers as a component of their voting experience that was unsatisfying in 2022 elections (EAC 2024a; Romero 2024).

Voter Education Materials

The volume of information needed to vote effectively in US elections is substantial enough to lower both public participation and confidence in elections (Adona and Gronke 2018; Amos, Smith, and Ste. Claire 2017; Barreto, Cohen-Marks, and Woods 2009; Merivaki and Suttman-Lea 2022; White, Nathan, and Faller 2015). However, effective voter education and outreach can reduce the barriers to political participation by helping voters access necessary information (Bennion and Nickerson 2022; Mann and Bryant 2020).

In 2002, HAVA established federal funding encouraging state governments to allocate additional resources for the “education of voters” (Merivaki and Suttman-Lea 2022, 48), but failed to define what this includes. Consequently, state and local election officials have high levels of discretion to determine what voter education efforts and materials consist of, resulting in significant variation (Alvarez and Hall 2005; MacManus 2005; Merivaki and Suttman-Lea 2022). State voter education plans, as submitted to the federal government from 2004 to 2013, frequently failed to comply fully with HAVA voter education standards (Merivaki and Suttman-Lea 2022).

In a world where voters increasingly rely on government websites for election information, it is important for state and local election officials to design high-quality and effective online voter education materials. Research has found that 41 percent of the public reports using election websites to find information on candidates and voter registration (Adona and Gronke 2018). Furthermore, voters often visit local election websites to view sample ballots before voting (Harrell et al. 2013). However, sample ballots available to voters before elections do not always match those used on Election Day, contributing to voter confusion and error as was the case in Sarasota County, Florida, in 2006 (Norden et al. 2008). Therefore, it is important that sample ballots be readily available both in paper format and on government websites, be easily located, and match official ballots. In addition to being a useful resource for voters, sample ballots that match official ballots will permit local groups and voters to preemptively identify ballot mistakes and inaccuracies (Norden et al. 2008).

The MSOS website allows visitors to view precinct-level “sample ballots” (MSOS n.d.). However, these “sample ballots” do not show ballot layout or instructions, but rather show the contests and candidates that will be included on official ballots (ex. MSOS n.d.). Like Michigan’s, the NCSBE website has a central repository of sample ballots, but voters can only view the sample ballots after entering valid voter information. The PDOS website, on the other hand, does not have a similar repository, but sample ballots can be viewed on county election websites. For example, Allegheny County’s website provides precinct-level sample ballots that appear to be facsimiles of official ballots (AC 2024).

When voters cannot easily find important election information, such as the location of their polling place or which candidates and issues will appear on their ballots, they are less likely to vote (CCD n.d.). The effect of poor voter education on turnout is particularly concerning given that accurate and useful information about elections and ballots can be especially difficult for some voters to find (Quesenbery, Ollove, and Frishberg 2017). A 2012 examination of 147 county websites conducted by the CCD found that counties with higher concentrations of people of color had homepages and webpages with fewer items and keywords (Chisnell 2013).

Moreover, voters with LEP and voters with disabilities also face significant barriers to finding information about elections and voting.

By the last year of an analysis of state HAVA voter education plans conducted from 2004 to 2013, a quarter of US states mentioned activities expressly connected to the education of language minority voters and 30 states mentioned activities expressly connected to the education of voters with disabilities (Merivaki and Sutmann-Lea 2022). Overall, these plans often did not meet the minimum language requirements established by the VRA (Merivaki and Suttmann-Lea 2022).

The absence of sufficient language-accessible voter education materials is especially worrying given that many new citizens and voters with LEP might not be familiar with the intricacies of US elections (CCD n.d.). A CCD (n.d.) study found that many new citizens reported being overwhelmed by the process of learning about civic life and their rights and frequently lacked time or other resources to educate themselves (Patten and Chisnell 2019). “There is a wide gap between what immigrants need to learn to pass the civics test at their naturalization interview and what they need to be informed voters” (Patten and Chisnell 2019, 14).

Some government election websites, such as the PDOS and NCSBE websites, include automated translation services such as Google Translate (PDOS n.d.b; NCSBE n.d.b). However, experts have cited issues with reliance on Google Translate and automated translation of technical terminology in general; they suggest websites post disclaimers about these translations’ accuracy and clearly notify users that translations are machine generated (ATA n.d.; DG n.d.; ATA 2022).

Although the Rehabilitation Act of 1973 and Title II of the ADA require government websites to be accessible to voters with disabilities, many fail to achieve this standard and remain inaccessible (ADA 2022; Evans-Crowley 2006; King and Youngblood 2016; Olalere and Lazar 2011). This is a particular problem because voters with disabilities report a preference for web-based election information (Johnson and Powell 2019).

Government website accessibility for people with disabilities is limited even at the federal level, where 30 percent of federal agency homepages failed an automated accessibility test in 2021 (Johnson and Castro 2021). Most government websites do not account for visitors with impaired vision or mobility issues that affect their ability to operate keyboards and computer mice (Johnson and Castro 2021). However, some government websites, such as the California state government portal, allow users to change contrast levels and font sizes (CA Gov n.d.).

Moreover, research suggests that election officials can better educate voters with disabilities on what accommodations are available to them, as some are unaware of the opportunities available (Schur et al. 2024). For example, a survey of voters with disabilities found that they reported a lack of understanding or had incorrect information about voting processes, including how to request disability accommodations (Schur et al. 2024).

The MDOS website provides links for captions and American Sign Language voter education videos. However, the website itself does not have any disability accessibility features, so these resources may be difficult for users with disabilities to locate and use (MDOS n.d.).

Recommendations

The EAC identifies several key topics voter education resources should cover—basic information on subjects such as voter registration and polling place locations, common voter questions, key deadlines and dates, and new election laws or policies (EAC 2022a). Like ballots, voter education information should be written in plain language and avoid confusing terminology (EAC 2022a).

Officials in states with straight-ticket voting should make a conscious effort to educate voters on how straight-ticket voting works before elections occur as research suggests that voters can sometimes be confused about how the option works; older, less educated, and Black voters may be more likely to make ballot errors related to straight-ticket voting (Herrnson, Hanmer, and Niemi 2012). In general, online election information should be easy to find by using links and keywords, and the most important information should be placed in the center of the page (CCD 2018). At the very least, election webpages should inform voters about ballot content, how to apply for mail/absentee ballots, where they can go to vote, current elected officials, and voter registration information (CCD 2018). Election websites should also make language and disability accessibility features easy to locate (CCD 2018).

Voter education materials should be specifically designed for voters with language access issues and convey basic civic information in their native language. These materials should be available in various formats—including printed, audio, and video—and on social media (Patten and Chisnell 2019). When thinking about access, election officials should not forget that there are digital gaps: some locations lack dependable internet service and some older voters and voters with LEP do not know how to go online for this kind of content. Therefore, printed materials need to be as accessible and accurate as possible. So, at minimum, education materials in voters' languages must convey the ways voters can cast ballots, how to mark ballots, and available language access accommodations and must also promote online resources (EAC 2019b; Patten and Chisnell 2019).

Furthermore, state and local election websites can use automated translation services if they post disclaimers *and* have all translations checked by a human translator (DG n.d.; DOJ 2021). Similarly, language accessibility features and translations should be tested by users with LEP to ensure accuracy and usability (DOJ 2021). Finally, election officials should conduct targeted voter education and outreach to members of these groups with election materials in their native languages (AAJC 2018; EAC 2019b; Patten and Chisnell 2019).

In addition to language accessibility features, state and local election websites should implement accessibility features that make websites easier to navigate for everyone, not just people with disabilities. Voter education materials designed for voters with disabilities should use strong color contrast, clear headings, bulleted lists, labels for buttons for screen reader technology, at least 12-point sans-serif font and have accessibility features that users can use to change contrast levels and font sizes (Johnson and Castro 2021; EAC 2024b.).

Materials should avoid background patterns, text boxes, and tables (EAC 2024b). Government websites should comply with the Web Accessibility Initiative's Level AA of the Web Content Accessibility Guidelines 2.2, released in 2023, which provide recommendations for online accessibility (W3C 2023). In May 2024, the DOJ adopted a new rule that requires state websites to adhere to the Web Content Accessibility Guidelines 2.1., Level AA (DOJ 2024c).

Finally, website usability should be tested by voters with disabilities (ACLU 2020), and election officials should work to promote disability accommodations within their communities as well as collaborate with local advocacy groups to distribute pertinent election information (ACLU 2020).

Conclusion and Areas for Future Research

A healthy and high-quality participatory democracy requires that every eligible voter is able to cast their ballot successfully. However, poorly designed, inaccurate, and inaccessible ballots and voter education materials hinder voters' ability to do so. Fortunately, there are evidence-based recommendations that can address systemic design problems within ballots and voter education materials. Despite these recommendations, there are numerous components of ballot and voter education design that merit further research.

While we have noted the tremendous benefits of language access outreach, such efforts can be a significant and costly undertaking for election administrators (LaVine and Jarboe 2019). Election administrators have noted that though language accommodations are federally mandated, the federal government does not provide funding to support accessibility efforts (LaVine and Jarboe 2019).

Further research on voting and disability access should examine how to effectively and securely adopt EPBs, which have been subject to technical malfunctions and could be targets of hacking and election interference (Jones 2020; Meyer 2024; NCSL 2019). Relatedly, vendor contracts for EPBs can be costly—Philadelphia County paid \$3.1 million to purchase the contract and spends \$589,000 a year to maintain their EPBs (Lai 2023).

Though states can sometimes pay county costs, rising elections costs already place prohibitive restrictions on state election budgets (Meyer 2024; Stewart III 2022). Conversely, while the initial costs are high, the long-term benefits of more effective election administration for all voters, not just those with disabilities, are likely to outweigh these costs. Additional research into disability access could explore online voting options for voters with disabilities who have reported interest in using online voting (Schur et al. 2023; Schur et al. 2024). Concerning overall election accessibility, further research should examine emerging technology that could reduce barriers for voters with disabilities or LEP (Schur et al. 2024).

More research should analyze how election officials can best communicate and organize voter education materials on election websites. Additional studies should identify where the largest gaps in voter education outreach exist and how these inequities in education influence registration rates, participation, voting methods, rejection rates, and public confidence (Merivaki and Suttman-Lea 2022). Relatedly, recent research focusing on the effectiveness of voter education messages, such as that by Romero (2024), can provide insight to election officials on how to craft communications with voters.

A healthy and high-quality democracy depends on elections that are accessible to every voter and in which every eligible ballot is counted. The right to vote should be equal for everyone and exist more than in name only. If implemented, our election science recommendations will result in fairer, more accurate, and trusted elections.

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