

Understanding Voting Barriers to Access for Americans with Low Literacy Skills

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Abstract. For our democracy to be truly representative, all adults who wish to vote need to be able to vote successfully and independently. But 42% of adult Americans read at Basic or Below Basic levels, according to the National Adult Literacy Survey, and PEW research shows that citizens with lower literacy levels vote at much lower rates than citizens with higher literacy levels. Similarly, adults with disabilities vote at much lower rates than adults without disabilities. Prior research has identified some of the barriers that affect voting access for adults with disabilities; this in-depth ethnographic study explores the barriers that affect voting access for adults with lower literacy skills. Understanding these barriers sheds light on the human implications of current voting system controversies.

While this research focuses on activities related to voting, the barriers, behaviors, and coping strategies observed also have implications for the design of other public services. The research joins a growing body of data-driven insight into how to design information and services for this 42% of American adults. It also provides insights that are useful for other populations who don't read well, such as English Language Learners, and for older adults who sometimes experience reduced functional literacy.

Keywords: Voting · Low literacy · Civic literacy · Disabilities · Ethnography

1 Introduction

Literacy—defined as “using printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential”—represents an important qualification for successful interaction with many elements of modern life. Yet according to the 2003 National Assessment of Adult Literacy, 43% of adults in the United States experience low literacy, defined here as scoring at the levels of Below Basic or Basic in prose literacy [15]. This presents substantial problems for civic participation in many areas, including voting.

Research has long established that low literacy has a negative impact on voting activity [13–15]. These findings represent a call to action for identifying and addressing elements of voting participation that are especially challenging for adults with low

literacy. This call to action is made more urgent by the overrepresentation of older Americans, individuals from racial/ethnic minorities, and Americans of lower socioeconomic levels among the ranks of those with low literacy [15].

In order to understand and effectively address barriers to voting participation, it is important first to understand the voting experience of individuals with low literacy. This study explores factors such as family experience and attitudes toward voting, voting activities—including registering to vote, travel to the polling place, and polling place experiences—and preferences related to voting options such as machine versus paper voting, early voting, and absentee voting.

A fundamental goal of such understanding is to identify both barriers to voting—elements that get in the way of voting for low-literacy individual—and facilitators, defined as anything that promotes a positive experience during the voting process. The current research is designed to help provide this information through in-depth interviews conducted with low-literacy voters, using an approach adapted from similar research into the voting experiences of people with disabilities [25].

2 Methods

This ethnographic study uses qualitative analysis of 54 in-depth interviews in order to understand the voting experience of adults with low literacy skills. The goal was to engage participants in discussion and storytelling about their experiences with voting—what they believe, what they do, and why—in order to better understand the complex nature of their experience.

30 participants were accompanied to a polling place on an election day or an early voting day, then interviewed about their experience and their voting history immediately after voting. These interviews, conducted in or just outside a polling place, right after a voting experience, helped participants provide the most reliable accounts of their experience possible without direct observation (researchers did not, of course, observe participants while voting). Of the 30 interviews conducted at polling places, 16 observations/interviews were conducted during early voting of November 2014, 5 observations/interviews took place on election day, November 4, 2014, and an additional 9 observations/interviews were conducted on election day, November 8, 2016. 8 of the participants were voting for the first time when interviewed.

To allow a broader sample, an additional 24 participants were interviewed about their voting experiences and voting history in the University of Baltimore's User Research Lab. These additional interviews were not accompanied by an immediate voting experience. However, researchers encouraged participants to tell the stories of actual voting experiences as much as possible. Of these 24 interviews, 10 were conducted during August 2014, 4 during December 2014, and 10 during April and May 2015.

The semi-structured interviews examined the following issues:

- Sense of civic responsibility and importance of voting, with questions about family voting patterns and history, personal voting history, and the meanings and significance of voting.

- Past and current voting experiences, with questions about preparation for voting (learning about candidates and issues, getting registered, finding the polling place), questions about the experience of voting (getting to the polling place, interacting with poll workers, interacting with ballots).
- Feelings about voting, as indicated by the adjectives chosen, spontaneous statements about emotional state or emotional impact, and presented affect during the interview.

2.1 Participants

Participants were recruited for the study from a database of participants maintained by the University of Baltimore, through street recruiting, and using snowball sampling, a non-probability sampling technique used in sociology and statistics research in order to research a population which may be difficult for researchers to access.¹

All 54 participants were African Americans living in or close by Baltimore, Maryland. Not every participant chose to share their age, educational level, or employment status, but those who did ranged in age from 18 to 71, with an average age of 45 years. In order to participate in the survey, the participants were required to qualify as low literate, i.e., reading at the eighth grade level or below as measured by the Rapid Estimate of Adult Literacy in Medicine (REALM) [7].² Participants' REALM scores ranged from 15 to 60, with an average score of 51 (Table 1).

2.2 Analysis

Audio recordings of the interviews were transcribed and converted to a spreadsheet format for qualitative analysis. The primary researcher conducted open coding to identify patterns and themes related to the research questions. Axial coding was then conducted to identify relationships among the open codes, and a set of standardized thematic categories was developed for systematic analysis [4, 9, 26].

¹ Snowball sampling is the most commonly used sampling technique for studying hard-to-recruit populations. Its potential disadvantages are minimized by using a diverse seed (a diverse group of initial contacts, found in a variety of ways), which was done, and multiple recruitment waves (asking at least three rounds of participants to recommend additional participants), which was done [11].

² The REALM is one of several possible instruments for estimating adult literacy levels. It is comprised of a list of 66 words that a participant reads aloud as a facilitator keeps score of words pronounced correctly; the score is the number of correct words a participant pronounces. Although originally designed to measure health literacy, REALM has several advantages for field work—primarily in that it takes 2–5 min, requires minimal training to administer, and does not feel like a literacy test to participants. The REALM has been shown to reliably distinguish between adults at lower literacy levels [1], although it does not distinguish between adults at a 9th grade reading level or above. The REALM is also highly correlated with the Wide Range Achievement Test-Revised ($r = 0.88$), the revised Slosson Oral Reading Tests ($r = 0.96$), the revised Peabody Individual Achievement Test ($r = 0.97$), and the TOFHLA ($r = 0.84$) [6, 17]. The REALM also has a high test-retest reliability ($r = 0.97$) [7].

Table 1. Demographic characteristics of study participants.

<i>Gender</i>		
Male	33	61.1%
Female	21	38.9%
<i>Reading level (REALM)</i>		
3 rd grade or less (0–18)	1	1.9%
4–6 th grade (19–44)	9	16.7%
7–8 th grade (45–60)	44	81.5%
<i>Age (52 of 54 reported)</i>		
18–40 years	21	40.4%
41–60 years	26	50.0%
61 or more years	5	9.6%
<i>Education (51 of 54 reported)</i>		
9 th grade or below	3	5.9%
10–12 th grade	29 (may include some grads)	56.9%
HS graduate or GED	5	9.8%
Some college	10	19.6%
A.A. or A.S.	3	5.9%
Bachelor's degree	1	2.0%
<i>Employment (32 out of 54 reported)</i>		
Working full-time or part-time	12	37.5%
Not working or on disability	20	62.5%

Each transcript was then reviewed for matches to the thematic categories by the primary researcher and one of the other researchers. Differences in coding decisions between the two researchers were discussed and settled by consensus agreement.

3 Findings

In our analysis of the interview transcripts, we focused on participants' feelings about voting, their voting history—including the role of voting in their family history—and in the aspects of their voting experiences that seemed to pose challenges or to make the process of voting easier.

3.1 Personal Voting History

Voting history of the participants varied widely. All but two had voted at least once. Some were voting for the first time on the day they were interviewed. They ranged from dedicated voters who had voted in nearly every election for decades, to occasional voters who had voted between 3–5 times over an extended period, to rare voters who had voted just once or twice over an extended period, to new voters who were voting for the first or second time. Some voters only vote in presidential elections, others focus on local elections (for mayor, city council, etc.), and some vote in both federal and

local elections. Voters who participate in local elections express a strong sense of the mayor and of their city councilman, and a conviction that these officials have power over their day-to-day welfare.

Some voters talked about voting shortly after they turned 18, alluding to a sense of growing up and entering the adult world.

- P7. The first time I voted? Oh my God. I think I was about 18 or 19; I don't know. When I first got that voters card. I was excited. Just go vote; didn't even know who I was voting for.
- P3. I felt like somebody because I voted.
- P51. Yeah... yes, because I was excited. 'Cause I was old enough to vote.

Note, however, that after participant 51's initial election, he didn't vote again until he was a grandfather. This suggests a need to follow up on initial enthusiasm in order to help build a regular habit of voting.

3.2 Family History of Voting

Some participants reported a strong family history of voting. They had memories of accompanying their parents to polling places before they could vote, of parents or siblings helping them get registered, of the pride of going with family members to vote for the first time after turning 18. 61% of the participants said their parents vote, or voted when they were alive. 48% told stories of family members actively encouraging voting, compared to 26% who said their families did not emphasize voting or place much value on it.

- P26. School told us too but it was more so by your parents taking you.... I grew up with my mother so I got the experience of going to vote and see how it was for them.
- P37. Yeah; my parents, I've never known them not to vote.... Election time would come, they would stand right at our door... to hand out ballots.... My mother would always tell us to offer them something warm to drink or if it was summertime, offer them something to drink.

Sometimes this family history led to regular voting by the participant; other times it did not. A much smaller number of participants talked about successfully passing this emphasis along to their children. Others described their failure to do so:

- P34. Only my son, he can vote now but he ain't voted.... He feels like you vote and they still don't get the right person.... He feels it's all fixed.
- P34. [My son don't vote] but that's because he a boy.... One of my brothers they won't vote. Me and my sisters, we be there, we be pumped up, have our shirts on, ya know. We want to win. Have our little shirts on.... [My son's] silly. He 20 but he's like 15 for real.

Others had memories of some family members voting, or some relatives who advocated voting, but voting was not necessarily emphasized.

3.3 Feelings About Voting

Participants' feelings about voting ranged from a deeply felt personal commitment, to lukewarm commitment, to paying lip service to the importance of voting (often coupled with a poor actual voting history), to explicit questioning of the efficacy and utility of voting. Reasons for voting were similarly varied—some participants cited a need to protect their benefits. Others expressed a personal sense of obligation to particular city officials. A few cited the problems facing the world, with the hope that voting could make a difference.

Reasons for Voting

By far the most frequently expressed, and foundational, motivation to vote was a belief that election outcomes influence governmental decisions—whether at local or national levels.

P20. My one vote or not vote might be the reason why somebody didn't get in. So I really try to pay attention to who I am picking as well so I don't pick the wrong person.... Because we gotta choose the people that speak for us. We can't do it ourselves.

The next most common motivation for voting expressed by participants was their own social and economic welfare. These participants explained that voting would help to protect their benefits, or the benefits of others, or community institutions such as schools and libraries:

- P4. Because I want to select candidates who have my interest in mind.
 P17. I grew up in a poor family and voting is important so they won't try to cut out their benefits, you know, like social service or SSI or Social Security.
 P21. Some of the presidents be making good decisions for the community and some doesn't like health benefits. I just voted for this year because of health benefits. For health and jobs. I think there be more jobs in the community.

Some voters expressed a desire to protect their children:

- P51. I'm out here voting [because].... I got a better chance with [candidate A].... I been in this neighborhood about 14 years, living next to white people. And [candidate B] get in that chair, lord knows the white people I'm living next door to, their true colors might come out... It makes a difference. I got grandkids, I got a son.
 P38. Who runs the city that you live in... it's important because it depend on [i.e., determines]... what's gon' happen within the next generation... far as health, everything.

A few voters expressed a sense of pride or obligation to past champions who had to fight for the right to vote.

- P1. I want to know who's running the country.... I want to have a say in it.... This is what my forefathers fought for.
 P52. Our ancestors and stuff fought for us to have this opportunity... and to not use it is like a kick in their ass.

Reasons Not to Vote

The most frequently cited motivation not to vote was a belief that politicians are dishonest or that the system is rigged, so that voting doesn't make a difference.

- P6. I believe they going to put who they want in there so to me it's a waste of time.
- P3. Some people say they into looking out for schools, trying to make schools better, but once they get into it, get their votes in, they don't actually do it. So that's the reason why I don't vote.
- P19. My family just don't vote. I don't know why. Their attitude is no matter who you put in the seats, they're going to do what they want to do anyway. They tell you one thing, when they get in office they totally do the opposite.
- P32. All of them is the same thing anyway. Always give you promises and never really stick to them at all.

Concerns of this type were expressed by 17% of the participants who discussed their feelings about voting. This included several participants who expressed elsewhere in their interviews a belief that their votes could make a difference—in some cases suggesting conflicting feelings about engagement and marginalization among these voters, in others reflecting changing views over time.

This feeling was also cited by participants who had voted once, upon turning 18, but who had not voted again (One of our participants had voted at 18, but then had not voted again until choosing to participate in the study, at age 51.). This suggests a window of opportunity for generating enthusiasm and educating new voters. For example, schools and other organizations could provide opportunities for high school seniors and others of the same age to contact locally elected leaders, could conduct voter registration, and could walk new voters through how to educate themselves about election issues and go about voting.

Quality of Voting Experience

Although all of the participants who voted during the study had a positive experience, a few participants had memories of very negative experiences with voting:

- P21. It was like dreadful because I didn't know nothing about it. They explained but I still didn't understand but I got the hang of it. That's why I really don't vote because there's a lot that you got to do.
- P22. The last time I voted it was crazy.... You had to sometimes you had to do your own voting, like write down the vote or something like that. You had sometimes machines... that would break down. Like you stick your vote in and it would just break down or you had to re-do it or the machine wasn't working. So it was really difficult for voters to vote or to stand in line or to wait or to do anything.

Not everyone who worried about voting had actually had a negative experience. Some participants worried prospectively that casting their votes would be difficult or require a lot of effort, or that they would not be successful. Others were afraid of not knowing what to do or of looking "ignorant."

- P45. I was nervous before I went in there because I thought I wasn't going to get no help.... People think you slow because you need a help. I got to stop thinking

like that. If I need help I just say excuse me, I need a little help. You may think I'm ignorant or whatever.... There used to be a time I wouldn't even ask. I'd sit there and pretend that I know and knowing that I don't know.

Several of these apprehensive voters chose to vote as part of the study. Afterwards, they expressed pleasure and relief at how positive their voting experience had been, describing the process as easy.

- P12. It was easy for me and I liked it. So I'll probably come and vote again.... Can't wait to do it again.
- P35. I look forward to doing it again next year.... I was all proud; I said can I have one of your stickers—because I want to show that I been voting today. I'm going to rub it in too. I wish I could bring some more people with me, come out here and vote.... Like I say for me for the first time, I'm thinking it going to be a bunch of people; it was going to be all these machines and I'll be confused which one to push and wouldn't be able to understand or couldn't read, you know, to that nature. It was nothing of the sorts. It was nothing of the sorts.
- P39. It was a simple process. And me personally, I thought it was going to be much harder and that was another reason why I hadn't voted in the past.... I thought it would be harder than actually what I thought it would be.... [I expected it to be] complicated. A lot of reading. It wasn't. It wasn't.
- P57. Oh wow, I really did it! And it was not complicated whatsoever!... I feel really nice. And look how many daggone stickers I got!

This positive reaction suggests another window of opportunity to increase voter participation, if ways to allay this preliminary anxiety could be found.

3.4 Issues of Civic Literacy

Before voting, would-be voters must navigate some fairly complex processes, such as getting registered, finding their polling place, and forming opinions that can guide their votes. Their success in navigating these processes is often hampered by a lack of civic literacy, which often accompanies low literacy in general [21, 22, 24].

Learning About Issues and Candidates

Knowing where to find information about issues and candidates and then interpreting that information to make voting decisions is a challenge related to both civil literacy and literacy in general [13, 22].

Most participants (78%) relied on television for information about issues and candidates. The next most frequently mentioned sources of information and guidance were the internet (30%) and other people—family, neighbors, or casual conversations during daily activities (35%). Billboards, newspapers, and fliers (from campaigners or in the mail) were also mentioned. Some participants (9%) reported that they formed opinions in part by meeting with candidates or volunteers going door-to-door or walking around the neighborhood.

Many participants claimed to feel “prepared” before going to vote, but the details of their experience contradicted this statement. Many mentioned seeing items on the ballot

that they were not prepared for. Very few mentioned the sample ballot as a source of information, even though one is sent in the mail to voters in Maryland.

- P20. So I don't mind just going for just the President. You get up there and vote, and you think you're going to be there for two minutes to vote, and two minutes turn to ten, who the hell are all these other people? I never heard of them one time, you know what I mean?... You don't know how many people you going to look at. A lot of us just younger come in and it's that.

One person wished he could learn about the ballot online before going to vote:

- P4. I think there should be somehow even prior to the voting, election, there should be some site where people can go to and they can see what is up for what will be in the ballot. I don't know if there's such a thing. Like if they're going to be voting for bonds or whatever.

Participants who did use the internet often used it as a follow-up source of information—they would see a billboard or a commercial, and then look up that person online. Only a few participants felt confident that they could do “deep” research online, such as researching candidate backgrounds or prior history. Several participants considered themselves to be still learning about the internet—newly available to them through a smartphone—although some of the younger participants relied heavily and with confidence on Google.

- P10. Normally I learn through TV, 'ya know; commercials. Things of that nature. As far as doing deep research, no; I've never been the type that did that.... [Online I look] just like who's the councilman of my district; stuff like that. Or who's about to run for council.
- P46. I'm learning it from this [Android phone].... I'm learning. I'm not going to tell you I'm a whiz with it. There's a lot of things on here—a lot of apps I haven't even got into yet. So it's like I'm an infant when it comes to technology.
- P33. No; just looking for information about candidates for voting. That's how I look up. I Google.... I bring in—I write off everything from my computer, put it in my pocket, bring it with me.

How to Handle Lack of Preparation

A few participants (7%) indicated that they did no preparation for voting. Some thought no preparation was needed. Others asked for help from a poll worker—and were sometimes disappointed to find out that the poll workers could not help them vote.

- P6. Like if you didn't know more they came and explained to you who the person was, what they did; stuff like that.
- P36. She was trying to help me with that but it wasn't really much she could tell me because I got to do it on my own. But once I started voting, and I read everything carefully, I felt good.

A handful of participants ended up relying on the campaign literature provided outside the polling place.

- P27. I know what I hear. I watch the news and everything. I read the stuff that they give us [outside the polling place].... It's helpful. They give the pamphlets for you to read through it and see what works for you; who you're against and who you're for.
- P35. When I came in they gave us some brochures on certain candidates so I just took some of those and read them.

Perhaps inevitably, participants regularly encountered questions on the ballot that they did not expect or were not prepared for. For some of these, such as ballot measures, they would routinely do their best to decipher the language of the measure and make a decision on the spot.³

- P34. When I get there and I read it, I just decide then right when I'm there.
- P58. I gave it a quick thought, and made the best selection I could.

Two participants indicated that they could also use personal experience to make decisions about judges:

- P33. This time I was much more prepared because I had my own computer. I already knew what I had to do. Looked everything up ahead of time. So it was much easier when I saw the names pop up and everything. Oh yeah—and I was fortunately to be in front of some people like the judges. I been in front of them so I know which one was good and which one I wouldn't want to be in front of again.

Registration

Registration was a hurdle for many voters and would-be voters. Among participants who talked about how they had registered to vote, many did so as part of another institutional transaction (e.g., social services, MVA, jail, or the draft). Others had registered at the instigation of their parents or other family members, or as part of a registration drive in a mall or in their neighborhood. In short, participants who had succeeded in registering to vote typically received external support in figuring out the required procedures.

In general, most participants didn't understand how registration worked. They were unaware that there is a deadline for registering before an election, so they sometimes registered past the deadline without realizing it (they sometimes received a provisional ballot, but were unaware that their vote might not count). Most participants did not know how to update their registration, or even that they needed to update it. Some of our participants simply went back to their old precincts to vote; others attempted to use a polling place closer to their current address, but were given provisional ballots or were re-directed to their prior precinct.

- P20. Because you only can go to vote in areas that you're really close to. I was down the street trying to go to another place.... You don't think it should matter because voting is voting and everything is confidential.... If I didn't have a

³ This finding suggests the value of including a plain summary such as is provided on ballots in California to assist voters with low literacy in interpreting the intent of ballot measures.

vehicle it'd be kind of hard because there's no bus line that goes to the elementary school [his prior precinct]. Hear what I'm saying? That's what I mean by shouldn't matter what area you live in because you might have to go somewhere that's off the bus line.

About 26% of respondents who discussed voter registration could not remember where or when they had registered. Seven participants (13%) had tried to vote at some point and been unable to do so because they were not registered, or had been asked to use a provisional ballot. Of the 30 interviews that occurred just after the participant had voted, five participants (17%) thought they were properly registered but had to use a provisional ballot.⁴ None of these participants realized that they had used a provisional ballot or realized that the problems with their registration might lead to their vote not being counted.

Participants who register without the kind of help provided in an institutional setting may think they have registered correctly when in fact they have not. Some of our participants talked about filling out registration paperwork at home or at a mall, but not receiving a registration card even though many weeks had passed. When they went to vote, sometimes they filled out a provisional ballot, but this solution is less than ideal as these votes will not be counted unless the problem with their registration is resolved. In a few cases, voters without valid registration were turned away completely by poll workers.

- P32. I went to vote one year and my name wasn't on the paper. So I had to fill out this form. But they let me vote. I had to do something. Fill out some papers where I put the address put back in the county.
- P36. It was cool but they didn't really explain. They just gave me the paper to fill out. I just filled it out. They said they was going to mail me.
- P8. Right now; I don't really know. I was under the impression that I was able to vote but every time I try, they tell me no I can't vote... Yes, I filled it out but no go.... I assume they wouldn't have because I never heard anything from them. That's why I'm saying that.
- P28. I had to start all over again then wait for them to send me another voter's card. I couldn't even vote this year.

One participant whose registration had not been successful (although she did not realize that) talked about the "difficulty" of the form, even though the questions were "ordinary" and not "hard":

- P40. [My sister] brought me a form home and we filled the form out to get our voters card which we haven't got it back yet.... The voting application [questions were] just ordinary—where you live at, date of birth, mother's maiden name; stuff of that nature. She helped me do all that; fill most of that out.... Well, it was kind of difficult for me because it was the first time I ever did it. It was kind of difficult. But hard; no. I wouldn't say it was hard to do but it was difficult.

⁴ Researchers determined this because they saw the participants get directed to the provisional ballot table, or inferred that they had voted using a provisional ballot because they had used "paper" rather than the electronic voting machines that were standard in 2014.

In several of these comments, the voter's frustration leaks through: they don't understand what went wrong and wish it was easier to "just vote." Sometimes the barriers to voting posed by the registration process felt like deliberate obstruction:

P47. I think maybe the voter registration [is] crap. I ... [It] shouldn't be so complicated sometime if you don't have your voter registration card or if you change address or whatever.... [I]f you a citizen of the United States and can prove that you are, it should never be an issue about having to re-register and that day you should already be... inside somebody's computer saying yeah; this guy's a registered voter. Should have no problem wherever you moving around the country. Should be able to vote. Wherever you want.... I ain't going to say [they] trying to take away people's voting rights, but make it harder for people to vote so they can get in or whatever to what they doing legally to try to get people not to vote. It puzzles me because it's not a complicated thing. It shouldn't be.

Finding the Polling Place

Another difficulty faced by participants was figuring out where to vote. The most common sources of information were following the address on their voting card or asking neighbors or family members. Some participants remembered their polling place from prior elections. Others saw the signs and activity surrounding a polling place near their home and followed the lines.

The complexities of the registration process also affected the task of finding the right polling place. Many participants did not know how to update their registration, and sometimes didn't know they could, so about 12% of participants simply went to the polling place for a prior address in order to vote. A somewhat smaller group (8%) went to the wrong polling place and were re-directed to the polling place associated with their registration status, but another 10% were simply handed provisional ballots. Only two participants (4%) looked up their polling place online.

P20. You only can go to vote in areas that you're really close to. I was down the street trying to go to another place. It was not far off but as far as your locations in your area, they want you to stay into the area. You don't think it should matter because voting is voting and everything is confidential.... If I didn't have a vehicle it'd be kind of hard because there's no bus line that goes to the elementary school. Hear what I'm saying? That's what I mean by shouldn't matter what area you live in because you might have to go somewhere that's off the bus line.

The role of poll workers was crucial in helping the sizeable contingent of voters who were in the wrong precinct or who had not successfully registered. Poll workers who just handed voters a provisional ballot without explaining what it was, or (worse) just turned voters away as unregistered, lost an important opportunity to act as facilitators.

Lack of Knowledge about Election Logistics

A sizeable number of participants showed limited knowledge about election logistics. Many of the participants had never heard of early voting. Many seemed unaware that elections include both presidential and mid-term elections, and unaware of the difference between municipal elections and federal elections. Participants tended to identify their voting history by what candidates or what offices they had voted for:

P6. The Democrat. And I do the government one. That's it.

P57. [I vote in] General, and (pause) just general election.... Yeah, when it was like [pause] that [pause] Catherine Pugh [mayor of Baltimore] thing.

Of the 43 participants who discussed or were asked about absentee voting, 65% revealed in their responses that they hadn't heard of it or were uncertain about what it meant. Of those who did know about absentee voting, several had concerns about it—including worries that the ballot could get lost in the mail, that they might forget to mail it in time, or that absentee ballots might be counted differently from votes cast in person.

P34. You never know about the mail. You know, like if it's getting there or they receive now like the door like that. Other people touches it and stuff.... I'd just rather use a computer to cast my own ballot because too many hands touch the mailed in one. I just think it's better this way, doing it through the computer. Because you get to do it yourself and you know at the end it's already cast.

4 Implications for Improved Voting Practices

4.1 Barriers

The convergence of many of the challenges described in the Findings above can add up to significant difficulty in voting successfully. Potential voters may not know when and where they should go to vote, what will be on the ballot, or how to register, or what the registration deadlines are. Because participants are unfamiliar with election policies and practices, they are more likely than other voters to vote out of precinct, or to not be properly registered. They are less likely to know about early voting options or the possibility of absentee voting. Their anxiety about complex reading-based activities can lead to anxiety or a lack of confidence about their ability to vote successfully [15]. Their primary source of information, television and news, may not provide sufficient depth or breadth of information about election practices. Compared to more literate potential voters, adult Americans with low literacy are less likely to have at-home internet access, and often have limited internet experience, making them both less likely and less able to find information or solve problems online—although it is true that smartphone usage among this demographic is growing, making it possible that their propensity to find voting information online will increase [18–20].

These barriers provide opportunities for election experts and officials to find ways to improve the voting experience of Americans with low literacy skills.

4.2 Facilitators

The study also provided insight into a number of facilitators that help individuals with low literacy achieve success in voting. These included support in helping voters get registered successfully, the potentially positive influence of poll workers, the advantages provided by early voting, the convenience of having polling places within walking distance, and the simplified interaction and reduced cognitive load that can be provided by electronic ballot marking machines [27].

Assisted Registration

As reported above, many respondents reported institutional support as part of successful voting registration. This speaks to the value of building voting registration into governmental processes such as social service visits or interactions at departments of motor vehicles, as well as well-organized registration drives sponsored by public or private organizations.

Convenient Polling Place Locations

Of the participants who talked about how they got to the polling place, 54% reported that they walked; 37% drove or got a ride from someone with a car; and 17% had to take public transportation (generally because they lived outside the city or were traveling to the polling place for a prior address). This speaks to the importance of convenient location as a facilitator for low-literacy voters who may find it more difficult to get to polling places that are inconvenient or further away.

Helpful Poll Workers

Poll workers clearly played a major role in making the experience of voting a positive one, and in helping voters feel successful. 75% of participants reported that poll workers were helpful.

- P16. At first it was kind of difficult until there was one helpful person that came over. She went through everything with us.
- P40. It was pretty good. I really learned something today.... I never voted before, and I thought it would be hard. But it's not hard, especially when you got someone standing there and helping you and directing you through the steps.

In contrast, only 15% of participants reported negative experiences with poll workers:

- P20. I might look at a lady facial features and see something like that. Why are you irritated? This is your job! You're here to help. What is wrong?
- P21. Some people be mean and nasty.... Like they rude. Like if I have a problem, if they take it out of my hand, like snatch it and stuff like that. Like take it next, next. Don't say welcome, thanks for coming, don't say nothing just next, next.

Unfortunately, these negative experiences with poll workers—even though they were relatively rare—tended to magnify the discomfort voters were already anticipating.

Early Voting

Some participants who were concerned about voting were asked to try early voting. Those who described their reactions were universally pleased.

- P36. Even though it's early voting, I did expect a lot more people. People go to vote, there be a lot of people. So I just expected more people. But it wasn't. It was calm. It was cool.
- P26. I guess like this early voting thing would make it a 10 for me. If I can do all my votes like this early? I'll be very happy because that means it's more comfortable for me, I don't have a line, I don't have the next person saying well, how long is she going to be going to that ballot or for the next person to feel uncomfortable about how long I'm going to be at that poll. So, yeah.

Voting Machines

The state of Maryland moved from direct recording electronic (DRE) voting machines to paper ballots in 2016. Thus, most of the participants used voting machines unless they had to fill out a provisional ballot or were among the nine voters who were interviewed in November 2016. Some participants remembered paper ballots from before the switch to voting machines, and a handful remembered the old lever machines used before 2004.

57% of the participants had the opportunity to compare experiences with touchscreen voting and paper ballots. Of those, 81% preferred touchscreen voting, and 10% preferred paper. Participants liked the touchscreen because it made voting faster, because it was simpler (voting one race at a time), because the text size could be enlarged, and because it felt to some participants as if the machine required less writing. Some participants felt safer with the touchscreen machines because they felt more able to fix mistakes; voters who used paper generally assumed they would be unable to correct an error.

- P1. You can have the text normal, large or extra large because there is buttons on it where you're able to read it. Like I said it's clear and if you make a mistake, you can go back and push the button—the same button that you pushed—to erase your mistake. The thing I like about it is at the end, if there is any mistakes, that you actually can go back into the voting and change them.
- P26. You don't have to write anything. You just touch it. . . . I think it's better for a lot of people because you might have some people that really don't know how to write or really don't know really what to do so the touch screen is a lot better—not only for us but for older people.

Some participants thought the touchscreen voting machine provided more information or help than a paper ballot.

- P34. They helpful like when it tell you to choose like more than one. They tell you how many you can choose if you want to pick more than one. And they tell you to hit next if you ready to move on. There wasn't nothing not helpful to me.
- P39. Because everything is explanatory on the computer as you just read and make a choice.

A few participants felt more trust that machines would be impartial and less vulnerable to error than paper ballots, which they incorrectly assumed would involve human handling.

- P24. Just press one button. Press it boom, for that person. Instead you got to scan, or fight it down, put it in a box, people got to count the vote. Negative. I think that be shaky a little bit. My vote might throw away or something like that. It's just crazy.
- P50. [Dismayed in 2016 to be using paper ballots again] This old way of reading things, that's so obsolete. You know it should be computerized now.... [instead of] you know, you having people sitting there, counting...

One participant was afraid that having the paper ballot exist permanently might make his votes less confidential:

- P56. I didn't particularly care for the paper ballot, and I asked a question was it shredded after, you know, it went through the machine, and he [the poll worker] said yes, but I didn't hear a shredder machine.... I would have felt more comfortable with it being shredded.

Many of the participants thought they would need help with the electronic voting machines, but most needed only minimal help.

- P12. Because I didn't know what to do at first. But once she showed me, I was on—I did it on my own.
- P15. The assistance I needed—I think it was how you started. How you needed to start it. That's all.

Some of the older participants spoke positively about the technology, but their unfamiliarity with it and their uncertainty about it lingers in their descriptions, while a handful expressed outright discomfort and preferred paper.

- P45. I'm not good with computers. I can learn. I like it though. I just have to get used to the technology. But I like it though. It was quicker.
- P53. I guess cause I'm so old school with the reading, I like to read.... [On paper] the ink is nice and bold where I can understand it, but it seems like the computer screen it could be big, but it still seem like I just don't get it,... I think it's a timing issue.... You know, where in reading I could take my time and read the line.... I don't like the touch screens.

One major concern in voting is whether or not voters can successfully make changes to correct an error or reflect a change of heart. A surprising number of participants did not realize it was possible to correct a mistake on their ballot, but of the 35 participants who discussed making changes, 88% of those who used touchscreen voting machines were able to figure out how to make a change, while of those who used paper, 71% assumed they could not make changes.

- P51. No. 'Cause it was in pen... If somebody behind me had said "Oh, I might have made a mistake" I'd say, well, if you did, I think your mistake about to go through!

4.3 Suggestions for Improvement from Participants

At the end of the interviews, participants were asked if there was anything election officials could do to help them have a better voting experience. Some participants did not have suggestions for improvement, but many did.

Several participants requested features or services that are already widely available. One participant (see above) asked for a website that would allow potential voters to see what would be on the ballot before the election, and would provide summary information about candidates. Another asked if the words could be enlarged on electronic voting machines. A participant asked for confirmation that absentee votes were actually received and counted (most states already provide a way to confirm that absentee ballots have been received). One participant asked if there was a way she could just sit comfortably at home, figure out her choices, and mark her ballot without coming to the polling place. The reactions of these participants suggest the potential value of already existing strategies for improving the voting experience, but also speak to the need to communicate and publicize available options more clearly for low-literacy populations.

Other services or features requested by participants have been offered in some jurisdictions, although not in Maryland. An older woman with poor health doesn't always know in advance how she will feel physically, so she wanted free transportation to the polling place, because "sometime I might be feeling good and.... I want to vote but can't get there." Free or discounted rides on election day are available in some cities, but this is by no means universal.

Some suggestions from participants would require legal action and perhaps even experimental research into appropriate implementation, such as including photographs next to candidate names to help voters whose "reading is not up to par" and to help voters remember "who was who." Election experts have not reached consensus on how photographs could be included on ballots without introducing bias [12, 28].

Other changes would require both legal action and technological advances. One participant asked if the voting machine could talk to voters—but this participant wanted more than just an audio ballot. He wanted to be able to ask questions, and to have the machine be prepared with mini-summaries of who the candidates are and what they stand for. Another participant had a similar desire, wanting to be able to speak her choices in an entirely verbal interaction. Several participants asked why you have to vote in one particular polling place if you are a citizen and can prove your identity—raising the controversial political and technological issue of how voter identities can be confirmed.

And, of course, some participants echoed the plea increasingly heard from many younger voters of "why can't I just vote on my phone?"

5 Limitations of This Study

This study was conducted in a single large urban center. It is likely that voting challenges and circumstances related to low literacy would be different in rural areas, or for other ethnic groups, or in areas of the country with substantial cultural differences. To

help address these issues, at least one follow-up study is planned for the next election cycle in rural areas of West Virginia.

Due to legal requirements that prevent researchers from accompanying voters as they vote, there was no possibility to include direct observation as part of this research effort. Instead, the study relied on self-reporting via in-depth interviews. Because of this, the findings are less reliable, for several reasons. Due to the stigma associated with inability to read well, participants may have overstated their success and underreported problems related to literacy issues, as has been shown to be the case with medical treatment [3, 8, 16]. Additionally, as shown in several instances in this study, low-literacy individuals do not always recognize their own difficulties [2, 10].

Potential strategies to alleviate difficulties in voting suggested by these findings or directly by study participants will need to be tested for efficacy. In some cases, such as use of voting machines with touchscreens, findings from this study already confirm that these strategies have value for some voters. However, many of these suggested strategies will need additional investigation to maximize their effectiveness and to identify and minimize any new problems they may create.

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