



# Designing to Support Blind and Visually Impaired Older Adults in Managing the Invisible Labor of Social Participation: Opportunities and Challenges

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## ABSTRACT

Continued social participation is a key determinant of healthy aging and lowers the risks of isolation and loneliness. While online technologies can provide a convenient way for older adults to connect socially, some prefer connecting offline with others in their community, which can pose different challenges, especially for those with disabilities. Yet, we still know little about how older adults with visual disabilities might leverage technology to address their needs for engaging in social events in their communities. We interviewed 16 blind or visually impaired (BVI) adults 60 years or older to understand their experiences engaging in community social activities and the role of technology in the process. We describe the challenges participants faced connecting with others in their community and their use of technology to overcome them. Based on our findings, we discuss design opportunities for technology to help BVI older adults manage the hidden labor social participation.

## CCS CONCEPTS

• **Human-centered computing** → Empirical studies in accessibility; Empirical studies in HCI; • **Social and professional topics** → Seniors; People with disabilities.

## KEYWORDS

older adults, blind and visually impaired, social wellness, social participation

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## 1 INTRODUCTION

Continued social participation is a modifiable determinant of health that lowers the risks of loneliness and social isolation and improves overall social well-being [26]. Social well-being involves continuing

and developing healthy relationships with others [68]. Maintaining relationships in later life can enhance one's physical and mental well-being and overall health [47]. For example, maintaining social networks may protect older adults against cognitive decline and impairment [10] and improve overall physical health [10, 79]. Despite the benefits of maintaining connections with others in later life, older adults often face barriers while connecting with friends, family, or neighbors [52]. Therefore, older adults are likelier to experience the unfavorable health effects of loneliness and social isolation on their social well-being [52].

Online social technology interventions such as social media [8, 19, 46] and more recently voice assistant technologies [5, 24, 34, 37] have been found beneficial for helping older adults to stay socially active and addressing some older adults' needs for engaging socially. However, some older adults choose not to participate in online social interventions [36, 77, 78] and prefer engaging with other people directly in offline social interactions, such as participating in group activities within their local communities. Yet, managing and navigating offline community social activities can pose different challenges, and some older adults, such as those with visual disabilities, may face additional challenges due to accessibility barriers [71]. Older adults with visual disabilities are less likely to participate in community social events [80] due to limited community and broader societal support [20, 67]. However, other factors such as the perceived importance (i.e., individuals' personal opinion about the value of participating in the event) [7] or logistical challenges [69] may also limit participation. Yet, we still know little about how older adults with visual disabilities manage social participation in community events and how they leverage technology to support the process of managing their offline social engagement needs.

In this paper, we examine older adults with visual disabilities' experiences when connecting with others in their communities for social purposes and their use of technology to support the process. We conducted semi-structured interviews with sixteen older adults who are blind or visually impaired (BVI) to understand how they connect with others and the barriers they face while connecting. We asked about their technology use for connecting socially, and specifically about their use of voice assistant technologies since they have been found helpful for supporting older adults' social and accessibility needs [24, 34, 37, 41, 58]. We found that BVI older adults face similar challenges as older adults without disabilities engaging in social activities; however, they also tend to participate in additional invisible labor when planning and engaging in community social activities. Our participants preferred to be involved in group social activities to connect with others, and they developed strategies to



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stay engaged. Still, they shared that this could require additional labor to plan for their access needs and manage others' perceptions and lack of awareness about disability and accessibility. We found that the invisible labor associated with participating in community social activities was sometimes a deterrent for participants. They shared that it sometimes discouraged them from attempting to engage socially in community events. We found that participants used technology to help support their participation in community social events; however, the ad hoc nature of the process of finding relevant events and managing accessibility needs for participation added to their invisible labor, and there were few options to address barriers related to stigma, managing others' perceptions, and the associated access fatigue. We reflect on design opportunities for technologies to help overcome some of the hidden labors of social participation to assist BVI older adults. We contribute empirical evidence of BVI older adults' experiences engaging in community social events, strategies they developed, open challenges, and the role of technology in supporting them. Based on our findings, we also contribute design opportunities for addressing challenges related to the invisible labor of social participation among BVI older adults.

## 2 BACKGROUND AND RELATED WORK

We discuss the importance of social participation for older adults and older adults with visual disabilities. In addition, we provide background on the invisible labor associated with engaging socially within society and technologies designed to support social wellness among older adults.

### 2.1 Older Adults and the Value of Social Participation

For older adults, it is imperative to maintain social interactions, develop close relationships, and continue community ties to benefit overall emotional and social well-being and help relieve stress [52]. Social well-being is one of six interrelated dimensions - occupational, social, intellectual, physical, emotional, and spiritual - that require counterbalance while aging to avert negative health implications [68]. Continued social engagement offers older adults a variety of support, including emotional, informational (defined as information and advice that are helpful for problem-solving and decision-making), instrumental (defined as tangible or materialistic goods and services), and positive social interactions [12, 63]. Therefore, regardless of ability, it is important for older adults to continue to engage in social activities to promote health [52]. Yet, as we age, we often need to adapt our social networks due to life events [52]. At the same time, older adults' social and emotional goals tend to shift toward strengthening existing relationships instead of pursuing new ones [36]. For example, relationships with family, especially siblings, may take on increased significance, and a loss of those ties may lead to sadness, loneliness, and social isolation [48]. Therefore, at a time when older adults need their social circles more, those social circles begin to become smaller.

Older adults are generally more vulnerable to social isolation and loneliness due to living alone, losing loved ones, having limited mobility, experiencing changes in eyesight and hearing abilities, and, more recently, because of the COVID-19 pandemic [44]. Older

adults are also at a 50% higher risk of dementia [45] and a 30% greater risk of coronary artery disease, which are also linked to social isolation or loneliness [74]. Changes in occupational status can also influence older adults' access to opportunities, attitudes, and their capacity to participate in particular types of employment [12]. For instance, retirement can change a person's social network by limiting or eliminating workplace social ties and opportunities, affecting their knowledge of and access to resources. Therefore, older adults may have an increased prevalence of mental illnesses, including anxiety, sadness, and other mood disorders, due to limitations on their ability to participate in certain occupations [11]. Additionally, interruptions to occupational involvement have also been linked to adverse health outcomes and social effects such as increased fall frequency, social isolation, and withdrawal from social responsibilities and connections [11, 32]. Therefore, older age, one's attitude toward self, beliefs about functioning capacity, and limited social networks are all important characteristics that affect an individual's ability to become socially involved [65].

### 2.2 Invisible Labor and Social Participation Among BVI Older Adults

While sometimes controversial, the social model of disability highlights some of the challenges faced by older adults when engaging socially [62]. It argues that many barriers faced by people with disabilities are constructed by others' mental attitudes and physical structures present in society that limit full participation of those with disability [62]. Disability studies researchers have noted that people with disabilities are often required to engage in what Scully [61] describes as hidden labor to engage in social interactions. Scully's work examines how people with disabilities are often required to manage or manipulate how they present themselves or their impairment to others to achieve social goals. Scully defines the additional effort (i.e., management) people with disabilities engage in to maintain social interactions as *invisible labor*. This labor can include managing "*one's self-presentation, identifying what the other person needs to know or wants to feel, evaluating which strategies are needed and implementing them, producing the required responses in turn, and so on.*" which Scully notes often requires additional significant "*physical and psychological energy*" [61]. Konrad describes a similar challenge in their work on access fatigue in which people with disabilities must constantly manage others' feelings and thoughts about disability when they choose to disclose their disability or are present in public spaces [43]. Konrad introduces the term *access fatigue*, in which people with disabilities must constantly help others participate in access, which the person with a disability sometimes deems as not worth the effort.

To maintain social wellness, older adults often seek social support through supportive connections, which also benefits their psychological health and their ability to continue social engagement [29]. Supportive connections, especially friendships, may be particularly important to older people who are adjusting to chronic late-life disabilities or impairments, such as vision loss [50]. For instance, among older adults experiencing vision loss, a higher level of family support was linked to a better psychological state, but a higher level of friendship support was linked to their ability to adjust to visual loss [50]. Therefore, maintaining social connections

and friendships can be particularly beneficial for older adults with disabilities experienced in later life, not only for social wellness but also for adjusting and learning about their disability.

Older adults with disabilities often face similar challenges as those without disabilities in maintaining and continuing social activities as they age, such as adapting to life events (e.g., death and retirement) [71]. Yet, for older adults with visual disabilities, other factors can also impact social participation. Older adults are at higher risk for visual disabilities due to the natural aging process, and visual disabilities are associated with higher rates of depression, isolation, and loneliness [20, 30]. While pathways leading to positive social participation experiences are numerous and complicated, personal health, well-being, and available resources in the neighborhood are significant determinants in promoting more social involvement among older adults [65]. Facilities and community cohesiveness are crucial facilitators of social participation and maintaining friendships [67]. Therefore, community and neighborhood architecture or the built environment may contribute to challenges of social participation for older adults with disabilities due to accessibility issues [20, 67]. For older adults, preserving mobility is crucial for maintaining independence, well-being, and social engagement [29]. Mobility, or one's ability to easily get around, is often vital to maintaining the quality of life and engaging in social activities, especially outside the home [31, 64]. Visual disabilities can also lead to decreased mobility and limited transportation options, making it difficult to get around [20].

Studies focused on BVI older adults and social participation also show that those with visual disabilities are sometimes less likely to engage in community social participation activities [80] and report positive self-rated health status [69]. When studying Japanese community-dwelling older adults (> 64 years of age), Takesue and colleagues found that visual disability was associated with lower self-ratings of health [69]. Yoshida and colleagues conducted a similar study on data from Japanese community-dwelling older adults (>64 years of age). They found that visual disability was also linked to lower participation in community-based social activities such as athletic and hobby groups [80]. Some research suggests that among BVI older adults, the perceived importance of, or the value a person attaches to, an activity can be a key factor in determining social engagement within community and civic life [7]. Therefore, BVI older adults may be more motivated to participate in community activities they find valuable. However, Takesue and colleagues note that there could be different reasons why social participation in community events is limited among BVI older adults, including being related to the (1) logistical challenges of leaving and traveling to community events making participation difficult or (2) intentional choice by the BVI older adult not to participate because they feel the event will be difficult to enjoy for a non-seeing individual [69]. Therefore, often, people with visual disabilities not only face challenges maintaining a social network and social activities but also managing the often-unseen labor and related time costs of managing information, resources, and others' perceptions associated with their participation.

## 2.3 Technologies for Supporting Older Adults' Social Wellness

According to a Pew Research survey, nearly 45% of older adults from the United States use social networking sites to connect socially with friends, family, or others [28]. Online social technologies are thought to enhance older adults' social lives and lessen the detrimental effects of loneliness on their mental and physical health [8, 46]. Therefore, within Human-Computer Interaction literature, there have been many explorations of potential technologies that can support older adults' social well-being online. For example, researchers have studied online social networking sites such as Facebook and why older adults do or do not use them [53, 54, 59, 81]. Others have explored interactive, tailored social interventions for older adults [16, 19] such as photo messaging walls [18] or tablet applications [77, 78] that support older adults socially.

Additionally, despite open challenges related to training and awareness, software applications that can be used on smartphones are thought to have the potential to increase opportunities for social engagement, especially among BVI older adults [30]. Phillips and Proulx, for example, highlight a need for additional technologies designed to support social interaction among blind and visually impaired individuals [57]. In their paper, they highlight initial criteria for designing assistive social technologies for BVI individuals, including an emphasis on unique BVI needs, considerations for minimally disruptive features, ease of use, and multimodal design that uses haptics or audio feedback [57]. In recent years, with the emergence of home-based conversational agents such as Alexa and Google Home, senior communities have also started exploring how different voice technologies, such as voice assistants, can support older adults socially to reduce social isolation [5, 24, 34, 37]. El Kamali and colleagues note that technologies that leverage voice and audio output, such as virtual coaches, can be a cost-effective approach to help improve older adults' well-being in the physical, cognitive, social, and emotional domains [41]. Research has shown that voice assistants also provide a variety of "skills" or applications that can be used to support users' social health, such as games that might improve mood [55], stimulate the mind [66], or relieve boredom [22]. In addition, built-in communication mechanisms can help older adults easily connect with others to support their continued social participation. For example, older adult participants from Scherr and colleagues' study noted that they utilized virtual home assistants at least several times weekly for video chats [60]. Further, voice assistants' natural language processing capabilities are thought to help facilitate the ease of use and adoption of these technologies by older adults with disabilities, especially those with visual disabilities [58, 72].

Yet, while these technologies have helped support some older adults' social participation, they are sometimes not well-accepted among certain groups. For example, some older adults prefer connecting with others offline [36, 77, 78]. Research also indicates that older adults have concerns about online social media, such as the time required for legitimate involvement, the loss of more meaningful communication, irrelevant material, and privacy [36]. Yet, older adults with visual disabilities may face additional challenges connecting socially offline within the community due to accessibility challenges and other barriers [71] and research suggests more work

**Table 1: Participant Demographics: Demographics, Self-Reported Social Health Challenges (D-Depression or Other Mood Related, L-Feelings of Loneliness, and SI - Social Isolation), and Self-Reported Chronic Illness that Affects Mobility**

P#	Gender	Age	Disability	Marital Status	Social Health	Chronic Illness
P1	M	65-69	Visual	Married		
P2	F	70-74	Visual	Widowed		
P3	M	65-69	Visual, Physical-Motor	Married		X
P4	M	70-74	Visual	Widowed		
P5	F	70-74	Visual	Divorced		X
P6	F	60-64	Visual, Hearing	Married	D, L, SI	
P7	M	70-74	Visual, Physical-Motor	Married	L	X
P8	M	60-64	Visual, Other	Unmarried		
P9	F	60-64	Visual	Married	SI	
P10	M	60-64	Visual	Married	L, SI	
P11	M	60-64	Visual	Married	D	
P12	M	60-64	Visual, Physical-Motor	Unmarried	D, L, SI	
P13	M	80-84	Visual	Married		
P14	M	70-74	Visual	Unmarried	D, L, SI	
P15	M	60-64	Visual, Hearing	Divorced	D, L, SI	X
P16	M	75-79	Visual	Divorced	L	X

is needed to design technologies that address their specific needs [29]. In this paper, we explore the experiences of blind and visually impaired older adults when connecting socially in their communities and the role of technology, including voice technologies, in addressing and facilitating offline social participation needs.

### 3 METHODS

To understand blind and visually impaired older adults' experiences and barriers when engaging or attempting to engage in community or group social activities, we conducted qualitative interviews. This research study addressed three broad exploratory questions:

- RQ 1: What are the current experiences of older adults with visual disabilities when attempting to connect with friends, family, or others in their community?
- RQ 2: What barriers do older adults with visual disabilities face while connecting/interacting with others within their community?
- RQ 3: What is the role of technology, including voice assistants, in helping to manage social activities within the community?

To answer these research questions, we conducted semi-structured interviews with sixteen older adults and analyzed data to gain actionable insights to inform design.

#### 3.1 Recruitment and Participants

We recruited 16 older adult participants who are either blind or visually impaired. For our study, we defined older adults as 60 years of age or older. We acknowledge that the definition of an older adult varies [35] in design-related research and can range from 55 to 65 years of age on the lower limit. This variation can also depend on many factors ranging from cultural to practical (e.g., aligns with retirement age). Our choice of 60 years of age or older aligns with one common way of defining the older adult population but also

aligns with other research to understand social contact for BVI older adults [30].

We recruited participants from the local community through on-line listservs and forums for blind and visually impaired adults. All participants were asked to complete a survey before the interview to gather demographic information and information about their use of different technologies. Six participants completed the survey independently, and with permission, the lead researcher helped the remaining ten participants complete the survey questions.

All participants (Table 1) were older adults located in the United States who lived in their local community (i.e., aging-in-place in their homes). Most of the study participants were between 60 and 64 years of age ( $n=7$ , 44%), with 70-74 ( $n=5$ , 31%) representing the next largest age group. Twelve participants (75%) were men and four (25%) were women, and the highest level of education completed for most participants was a college degree ( $n=7$ , 44%), followed by some college ( $n=6$ , 38%), postgraduate ( $n=2$ , 13%) and high school degree ( $n=1$ , 6%). Of the participants, the majority were married (50%) and living with a spouse. Most participants self-identified as White/Caucasian ( $n=9$ , 56%), followed by Black, African, or African American ( $n=5$ , 31%). One participant self-identified as Asian and one as mixed race (Black, American Indian or Alaska Native, and Asian).

All sixteen participants had visual disabilities, and six (38%) self-reported an additional disability, such as a hearing impairment or motor disability (Table 1). Five participants (31%) reported chronic illnesses such as reduced kidney functioning, ongoing challenges with their legs, pinched nerves, or stage 4 cancer that impacted their ability to get around. Seven participants (44%) self-reported experiencing feelings of loneliness in the year prior to the study. Six (38%) reported feelings of social isolation, and five (31%) reported having depression or other mood-related challenges in the past year. Of the nine participants who reported experiencing social health challenges in the past year, five (31%) reported more than

one challenge. Seven participants self-reported having no social health challenges.

Twelve of the sixteen participants (75%) shared that they were regularly involved in social wellness activities such as getting active with others or participating in group activities as defined by the National Institutes of Health [2]. Eight participants (50%) regularly provided caregiving with most babysitting grandchildren or other children (n=4, 25%), or providing companionship and emotional support (n=3, 19%). Six participants were also regularly involved in community or recreational groups within their local community (38%).

### 3.2 Interviews

We conducted one-on-one interviews remotely using phone calls or video conferencing software. Conducting remote interviews provided the flexibility of reaching more participants that may not have been possible locally. During interviews, we first collected demographic and background information and followed by asking participants questions about their social experiences. Following the background survey, we asked participants questions about their current ways of interacting with others and the group physical or social activities they participate in. We crafted questions about social activities using the Social Wellness Toolkit developed by the National Institutes of Health [2] to explore the wide range of potential social activities someone might participate in. We also asked participants about the challenges they face engaging and interacting with others in the community and their use of technology to facilitate the process. The entire interview session lasted approximately 50-60 minutes.

We audio-recorded and transcribed each interview session using automated transcription software. Once transcribed, one researcher reviewed each transcript manually to validate that the audio was transcribed correctly. For data analysis, we used an iterative coding approach using the general inductive analysis [70] followed by reflexive thematic analysis [15] to generate the final set of themes. We initially used the general inductive analysis approach to categorize data and establish connections between the research objectives and evidence in the raw data [70]. In the initial round, the two researchers read each transcript to review participants' answers to research questions and made notes of potential codes. We acknowledge that this step is not necessary for reflexive thematic analysis [15]. However, our goal was to understand the general topics participants discussed and how they connected to the broader research questions. Following the general inductive analysis, we completed additional rounds of coding using the reflexive thematic analysis approach [15]. In the initial round of reflexive coding, the two researchers reviewed a sample of the transcripts and developed a set of descriptive codes. The researchers then met iteratively to identify, discuss, and categorize codes using Miro [14, 49], a collaborative software, to identify common themes across the transcripts and generate a final list of themes. High-level themes included older adults' current experiences connecting (e.g., current social participation, strategies), barriers to connecting with others (e.g., approaches to connecting, the impact of disability, disruptions due to life events, and logistical challenges), invisible labor, and the role of different technologies for helping them overcome the barriers

shared (e.g., mobile, social, and voice technologies). All participants were provided with a \$30 grocery gift card for their time at the end of the interview. We received approval from the Institutional Review Board at Indiana University before data collection began.

## 4 FINDINGS

Our findings suggest that participants preferred to join social activities such as volunteering or group physical activity classes within their communities to connect with other people. Participants described that they had successfully engaged in social activities, and many had, over time, developed strategies for navigating and managing participation in social activities within the community. Yet, despite most participants being socially active, they described challenges when attempting to engage socially in their communities. In addition to common barriers faced more generally by older adults, participants described engaging in additional invisible labor [61] to ensure their accessibility needs were met and manage others' perceptions and awareness of their accessibility needs. We found that while technology was helpful, participants felt that there were additional opportunities to support them in managing social participation.

### 4.1 Experiences Connecting with Others in Later Life

Participants self-reported feelings of social isolation, loneliness, and depression; however, most engaged regularly and found ways to connect with others. These findings align with prior work that found that an active social life does not preclude feelings of loneliness, social isolation, or depression among older adults, although it can minimize risks [52]. Like many older adults [71], participants shared that as they had gotten older, it could be challenging to find new people to connect with who shared their interests due to life events or new or changing caregiving expectations. Yet, despite challenges, participants were actively involved in community social activities and developed strategies to stay involved. In the following subsections, we discuss participants' experiences navigating social participation in later life and their current involvement in community social activities.

**4.1.1 Navigating Social Participation in Later Life.** When asked about their experiences engaging in social activities in later life, participants shared experiences adapting to changing social networks due to retirement, the pandemic, which disproportionately impacted older adults, and changing caregiver responsibilities, which some felt impacted their ability to engage socially over the years. Participants discussed experiencing changing life experiences such as moving to an entirely new city or town, a life partner's sickness or death, or family separation that impacted their social participation in the past. Participants in our study had also navigated the 2020 global pandemic as older adults and discussed experiencing social isolation due to the COVID-19 pandemic. For example, P2 shared, "*I was here during the pandemic, and [there was] no socializing; we connected just by online and telephone. During the pandemic, and that was real hard for me. And also, my husband was sick, and I was hit by a car.*" However, even when encountering challenges, they developed strategies to attempt to make connections.

Six participants shared that one of the ways they attempt to connect with others and make new friends is to try to find something in common and initiate a conversation based on the situation. However, they mentioned that finding others with common interests could also be challenging, and connecting with people with different interests could be difficult. Two participants shared that they felt that conflicts of interest happen more often nowadays due to societal divisions. Several interviewees described that they sometimes feel shy and afraid that they might say the wrong things while interacting with others and thus avoid communication altogether. P2 shared, *"I think part of it is because I am a little shy. And part of it is because of our society today being so divided in so many different ways. I'm always afraid that I will say the wrong thing or hurt someone's feelings or make them mad. Just because our society is the way it is. It's so fractured today which makes me very sad."*

Participants also shared the complexities of managing new caregiver roles and what some felt could be a double-edged sword of caregiving as a social opportunity. Caregiving activities such as babysitting grandchildren or assisting friends or family with daily activities are believed to have built-in benefits for social wellness, especially for older adults [1]. However, we found that caregiving as a social activity brought much more complex feelings and perspectives about the benefits. Out of sixteen participants, three (19%) shared that they participated in social caregiving activities such as providing companionship and emotional support for others, and another three (19%) would babysit grandchildren.

Two participants, P2 and P10, described that providing full-time caregiving to a single person can be sometimes difficult, as it consumes a lot of time. Therefore, they felt caregiving sometimes kept them from their preferred social activities. For example, one participant shared that her husband was going through some severe medical treatments that required her to be with him for the entire time. While she felt connected to her husband socially, she missed participating in other social group activities. P2 shared, *"Caregiving is really hard, and I'm not even looking forward to it. I think it (caregiving) can make it more difficult to connect socially with others. Because you're with one person almost all the time."* Other participants saw caregiving as a potentially positive social opportunity, sharing their opinion that some older adults in their 70s to 90s can feel lonely and having someone listen to their problems and provide advice to overcome them could be helpful. For example, P12 shared, *"[It would be nice to] just be able to talk to someone that might be going through [a similar situation to] what I've been through already. To just be able to share information to help them move on and let them know that it's possible to keep your independence and to let them know that there is help out there for you. Understanding that letting them know that there will be times that you will be depressed but it only lasts for a little while. And help them understand that you can still strive to keep your independence like I just said and that you're not alone. Basically, you're not alone."* Another participant shared that she tries to practice caregiving by volunteering with an organization connecting older adults from different countries. The organization matched her with three older adults in their 90s from European countries. P9 said, *"You can tell just because I only have to call them once a week. And I'm on the phone every other day with the one. And yeah, you know, she looks forward to my call. And I also send them cards like at Christmas I sent them a card with a with a lottery*

*ticket in there. And in a picture of myself, so they know, and I never talked about my blindness, because I figure this is about them. Not me. That never came up."* Therefore, although participants engaged in caregiving in different ways, overall, participants had mixed feelings about caregiving as an activity to connect socially with others. This finding aligns with broader caregiving challenges where caregivers sometimes feel overwhelmed and burdened despite enjoying the activity[27].

**4.1.2 Current Involvement in Community Social Activities.** Although participants shared that they had experienced some challenges when connecting with others socially, many participants in our study were actively a part of social groups within their local community. Of the sixteen participants, nine (56%) were involved in group activities like hobbies, volunteering, or community groups, and five (31%) were involved in group physical activities. Participants shared that they were involved in activities at senior centers, sports clubs, blind veterans' groups, and blind workshops. The participants shared that they joined such groups to become involved in community activities that keep them active. They felt that participating in these activities creates opportunities to meet and interact with new people, make friends, and reduce feelings of loneliness or isolation. Participants also mentioned that they find participating in group social activities beneficial for expanding their experiences and learning new things.

Participants knew the importance of engaging socially as older adults, and while they enjoyed engaging in group social activities, they described that finding a suitable social group often involved multiple decisions and considerations. Some participants discussed that they preferred smaller groups, some preferred larger groups, some preferred to only be around people with similar disabilities, and some preferred to be involved with people regardless of their disability or age. P4 shared, *"You need to talk about news. And that's why you need to talk to the [other] seniors, and it also keeps your mind sharp about other things going on about senior problems, whether it's about a harmless disease, or keeping up about cancer, or keeping up about our travel. And so, you learn from one another. That's why it's important to get out and do this [try to connect with other groups of seniors]. So, I'm aware of it. I just gotta find the right seniors' program that I'm comfortable with, and they're comfortable with me, too."* Therefore, participants were aware that finding relevant, suitable, and accessible activities would require some effort to manage.

## 4.2 Managing Invisible Labor and Social Participation in Sighted Environments

While the overall findings demonstrate that participants enjoyed engaging socially and being involved in various group activities helped them to be active and learn new things, they shared that they needed to develop strategies for finding suitable social events in their cities or neighborhoods because of factors related to their personal experiences as a BVI individual or due to a need to adapt to sighted environments. Aligned with Shakespeare's social model of disability, we found that the experiences participants described were often limitations constructed by society. [62] They shared experiences developing strategies and managing access needs and situations that align with the definition of invisible labor [61] to engage in community social events. Some participants felt that

these events were designed primarily around the needs of sighted individuals, with some sharing that it significantly limited their motivation to participate. We discuss experiences participants shared in building new social networks as an older adult with a visual disability while managing accessibility needs to participate in the activities and others' perceptions and lack of awareness of access needs when engaging in group social activities.

**4.2.1 Building New Social Networks as an Older Adult with a Visual Disability.** Participants described a need to develop different strategies to build their social network as older adults with a visual disability. One participant mentioned that growing up, he attended a blind school and was surrounded by blind and visually impaired people all the time. Therefore, over time, it became difficult for him to socialize outside his circle of BVI friends, which continued into later life. P5 said, *"I don't think I'm as active as I could be. Because this is one of my drawbacks, I guess. I went to a blind school. They [the school] just tagged you to a group. And I don't know a lot of people in the town. Even though, let's say, I was raised in the town. I was not home in the town. And so, I didn't get to socialize with people as much as I would like to"*. P5 explained that once he finished school, he found it challenging to connect with sighted people within his community because he had not had much experience engaging with them in the past.

Other participants shared challenges finding social groups designed to connect older adults with visual disabilities because they were unaware of how to find them or because opportunities were limited. P11 mentioned, *"I would love to be part of adaptive sporting programs. Because I used to be a very good athlete while I was in the military and high school, and I'm very athletic. But it's just difficult to find someone that's near me to kind of introduce me into those things [groups open to BVIs]"*. Two participants were eventually able to find blind groups that hosted social activities, like going to a restaurant or bowling once or twice a week as a group. However, due to the COVID-19 pandemic, many activities have stopped, and they felt that no one had the initiative to start such activities again. P6 shared, *"You have to look for newsletters of local places. Do a lot of Googling to see if there's anything in your area. And as you get older, we connect with and contact the senior centers, but a lot of them are not as active. COVID stopped a lot of that"*. Therefore, participants were able to build their social connections by finding social or community groups of interest that were designed for or inclusive of blind and visually impaired older adults. Yet, participants also described that finding those groups could be challenging and require additional effort, such as attempting to find someone who could share information or conducting additional research on their own.

**4.2.2 Managing Logistical Challenges and Accessibility Needs.** Participants also discussed their experience managing logistical and other accessibility needs to travel to community social events. While some participants were able to manage travel needs, others were not. Therefore, finding transportation to social activities was our participants' most mentioned barrier to social participation. While finding transportation for traveling outside the home is a well-known barrier to social participation for some older adults [51], our participants tended to describe the additional labor required to not only find transportation but also ensure that transportation was

accessible. For them, doing this extra research posed an additional challenge, and they described that it sometimes discouraged them from participating in social activities outside the home.

Three participants shared challenges they encountered with public transportation near them not being accessible. They shared that the lack of accessible transportation made it more difficult for them to attend social activities in their area. P7 explained, *"Now, say I needed a ride someplace. I call the county bus because we don't have any sidewalks there and try to get to a bus stop. It's probably a half a mile walk. But you can get a ride from the county, but you got to call them 24 hours in advance. And then they give you a three-hour window when they can pick you up so. More or less makes it nonusable"*. Two participants mentioned that transportation barriers discouraged them from meeting family members or new friends outside the home. They described that they would often need to do a lot of research about transportation options and the layout of the facilities before planning to go to any social event outside their home. Because of this, they discussed that they felt that their environment and where they lived provided minimal opportunities to do the things they wanted socially. The transportation barriers, such as lack of accessible public transport options (e.g., bus) within walking distance and flexible rideshare alternatives in addition to the work required to research layouts, sometimes discouraged social participation and impacted their feelings of independence. P5 explained, *"I think that's probably the most discouraging thing is, I feel like I don't have all of the independence that I'd like to have. I couldn't use; we don't have Uber, we don't have any of that kind of stuff. So, where I live is probably not the best place for a totally blind person or visually handicapped because I'm not even close to the bus system. So, I think that's probably one of the most discouraging things for me."*

Another two participants also shared that they face barriers when trying to understand the layout of public places. They discussed that if they decided to get involved in any social activity, not only would they need to figure out the transportation and if it was accessible, but they would also need to allocate additional time to get there early to learn the layout of the place. P6 shared their experience, *"Visual impairment is different because a lot of the people are driving, and you are trying to get to this location to go to, say, a yoga group. It is not as easy [for me] as somebody else can just jump in the car and go. So, you deal with the barriers of transportation; you also deal with the barriers of trying to learn layouts of these places that you only go to, to participate in the activities"*. Another participant, P15, mentioned that he would like to participate in social gatherings to learn new things, but only in a controlled environment where organizers have given special attention to accessibility. P15 mentioned, *"I like social events, but there's always that lack of effort not in a controlled environment. Just like here at the blind rehabilitation centre, it's a controlled environment. Everyone here is in the same boat, and you got an educational system where everyone's learning. So that's what I call it as a controlled environment."*

The lack of accessible public transportation options and easy access to layout information for public facilities discouraged some participants from getting involved in social events in the community around them. Participants shared strategies such as devoting additional time for research to determine if accessible transportation



was available for social activities in the community and to understand the locations' layout so they could make sure they could navigate the space once there. Yet, some participants described they felt that these strategies required additional effort on their part because of the environment's limitations for supporting those with visual disabilities.

**4.2.3 Managing Other's Perceptions and Lack of Awareness of Access Needs.** In addition to logistical challenges related to planning to participate in a community social event, participants shared that they felt that, in their experience, sometimes people in society were not aware of how to accommodate people with disabilities who wished to join group social activities or did not provide access. P6 shared that because of their visual disability, they felt that they could not "browse" opportunities for social activities freely, especially if the communication medium was not accessible. They shared, *"When you're visually impaired, you can't just see to go in [to a community group]. We miss advertisements on doors or things like that; a community group might advertise it, but we miss that. So, we must search for that kind of stuff on the internet. To be able to find an activity, so it's a challenge."* P6 elaborated that it could be difficult to find opportunities of interest when organizations offering social events use communication mediums that only consider sighted individuals, necessitating additional steps from the BVI individual to find these opportunities elsewhere on their own. P12 shared their experience that they sometimes found it difficult to find social groups and activities that might interest them due to some groups' reliance on primarily visual forms of communication for advertising events and therefore thought that the best way to offer fair chances for participation was to use more accessible mediums such as social media. P12 shared, *"I would say like [there is a] lack of fair, and what I mean by fair, is like the fair knowledge [of what's going on in the community]. Like putting something [information]- So hey, we got this meeting at such and such park this time of day, putting it in the newspaper and allowing people to see it by putting it on the news, the evening news. But mainly by social media, that is the only way that you're going to get the word out to get people moving, joining different things."*

Some participants also shared that sometimes they feel that other people feel uncomfortable around them or are unaware of how to talk with blind and visually impaired individuals, which they felt can make it awkward to try to engage in social exchange. One participant stated that because of their visual impairment, she sometimes could not figure out whether the person in front of her was looking at her or not while talking. For that reason, she was self-conscious and tried to develop strategies to actively create a comfortable atmosphere with others for better communication. Still, she explained that the feeling of needing to "prove" to others that she was not different bothered her. P6 shared, *"Because of my eye problem, my eye constantly moved. I can't look at somebody like eye contact; they would be uncomfortable with it. And I tried to break the uncomfortableness. That's the part about that I would say that bothers me the most: You always have to try to prove to people that we're not any different -We just have to do things differently."* Other participants shared similar strategies they had developed to try to connect with others. Another participant shared how he would make an effort to learn people's voices to communicate with them

to try to build rapport. P5 shared, *"If I was standing by you, the way I would probably know of you wouldn't be what I see of you, it would be your voice. And so, I kind of have to learn people's voices."*

Furthermore, participants felt that others might not be knowledgeable about disability, so they do not know how to react and behave with older adults with disabilities. P4 noted, *"I think people want to interact back to [a blind person], but they do not train, or they're not aware of the disability of a blind person. They don't know what the strengths and weaknesses are of a blind person. Being blind, you always have to educate and train people about your abilities."* Another participant, P6, shared a scenario that happened to her. When she decided to join a group fitness activity, it was difficult for her to find one, and once she found one, the instructor was unaware of how to accommodate her disability. So she ended up not being able to join. She shared, *"You're also dealing with the barrier that some instructors really don't know how to be descriptive because you can't really tell what they're doing. So usually, you end up not being able to participate because the instructor is not well trained and being descriptive [which she needed to participate]. So, you have to seek out instructors that are more descriptive, which can be hard because it's not easy to find."* P9 shared a similar experience when she participated in a group physical activity. She mentioned, *"I worry about accessibility. I'd love to do yoga, but I don't know the positions. And I've tried through this American Council of the Blind, they have the yoga once a week, you know, virtually, but they don't describe the positions very well. I don't think you really can, you know, put your hand here and put your hand; it's just too complex. I really needed someone to show me the positions one on one. But I would love to go to yoga. You know, in a group, Uh, you know, again, I don't know, how verbal the teacher would be. Okay. So, I kind of hold back."*

Participants shared that they felt that sighted people sometimes did not know how to interact with non-sighted individuals or were not aware of their access needs. Therefore, some shared that managing others' perceptions and lack of awareness could sometimes be a barrier or make it difficult for them to be involved in social activities within their communities. Like other challenges they faced with finding and planning activities, our participants shared their resilience in adapting and finding strategies to continue engagement. However, some mentioned that, at times, they found it difficult and would hold back from participating.

## 4.3 Using Technology to Connect Socially

We found that participants used some technologies to connect with others online; however, most of our participants used technology as a mediator to find and coordinate offline social activities with others or within their communities. When asked about voice technologies, while some participants used them daily, they were currently not using them to support social activities. However, they shared some ideas of how they envisioned those voice technologies might be used in ways they used other technologies as a mediator to connect with others.

**4.3.1 Current Use of Technology to Support Social Participation.** Participants were currently using telephone, e-mail, SMS (Short Message Service), and social media platforms to connect with their friends, family, and others. Participants also shared that they used the Internet and social media to find group social events in their



neighborhoods, either online or in person. For example, two participants shared that during the COVID-19 pandemic, they started using Zoom, a videoconferencing software, to meet other people virtually in groups. However, one participant shared the potential downside of using Zoom when participating in some group social activities. She mentioned that she joined the online social activity because she wanted to interact with people in a group, but the group rule was that participants remained on mute during the activity. P9 shared, *"I'm also very interested in languages. So, I reached out on this group of blind people; it's called the American Council of the Blind. And they have hourly programs seven days a week. And one of the things that they offer is a Latin class, one day a week for an hour. So I have joined that, and I really enjoy that. But there's very limited communication with the other people that are in the group, you know because you have to mute. And so there's not much socializing going on there."* Therefore, while she enjoyed her class, she felt the group rule restricted her ability to communicate with others in the way she had hoped when she joined.

Three participants shared that they were using Facebook to connect with others digitally. For example, P9 shared how she found various interest groups on Facebook that she could join to connect with other older adults who like to sing. She stated, *"I've reached out on Facebook to join groups because I am a singer. And I found a group just the other day of people that are older, and they can, you can sing from your house. And then they, if you can record your singing part, they will add it to their recordings. And you will be one of the people whose recordings are combined. And we'll be, you know, available on Facebook for you to listen to when the show or the presentation is played."* One participant mentioned using Pokémon GO as an opportunity to socialize and meet new people and would use Facebook to find game-related social events to join. P5 shared, *"When I was starting that Pokémon [game] thing, the whole idea was that [the company] they wanted to get [people] together, socialize. And that is what you do. You went you are out there looking for these little Pokémon and then you battle and you get to know each other. So yeah, that is a big social thing."* However, most other participants shared they mostly used technology to connect with people who could help them find in-person (e.g., offline) social activities that they could participate in within their community.

Participants mainly discussed using word of mouth and referrals from advisors or event coordinators to explore the group social events available to them in their community and they used online groups and Internet searches to find and help facilitate social opportunities in their local neighborhood. P12 shared when asked how they used technology to support connecting, *"I would say social media. Social media will be your best bet because nowadays, everything kind of surrounds the social media aspect of Facebook, Tik Tok, Snapchat. Those avenues there would help. Sending out newsletters to collections or to senior citizen organizations, things like that. Would help to get the word out."* P7 shared he used the Internet but mainly to bookmark potential social events he might like to attend in his community. He stated, *"I got a few things. Like one thing that's called Saving links that the city puts out [about local social events]. And I guess one thing that the county puts out is called Camp Calm. And in there, they list events and things that are going on and, find out already from a friend."*

Another participant, P9 also shared she had tried apps that could facilitate group meetups with other seniors; however, that did not work out and left her with concerns. She said, *"I have tried [this app] years ago ... I don't know, 10 years ago. The places where they wanted to meet was too far. It was near colleges. And I was afraid to go there on my own. And then, of course, the transportation to get there and home."* Therefore, while most participants preferred communicating offline, they used technology to support them in making those offline connections, and even then, some were wary.

**4.3.2 Use of Voice Technologies for Connecting Socially.** We also asked participants to specifically comment on their use of voice technologies since they have been found potentially useful for helping older adults socially engage [17, 72, 73] and supporting people with visual disabilities [58] in accessing information and connecting socially. Most participants used multiple voice technologies (Figure 1). Yet, all participants shared they used them mostly used them for entertainment or supporting other daily living activities such as listening to music, setting timers, and reading aloud books and recipes.

Participants shared mixed feelings about how these technologies might support them in connecting socially. P3 mentioned they felt voice technologies like Alexa could, *"open up a world for somebody that didn't realize that technology was there, and maybe it gives them a little confidence to step out, you know, and try something new."* However, others shared that they had experienced challenges in the past with some voice technologies and they felt those would need to be addressed to better support older adults and older adults with visual disabilities. P9 shared their experience with their mom, *"I've seen my mom with Alexa. She [my mom] has a lot of physical issues with her hands. She can't use her hands. She can't use her eyes... She gets totally confused with Alexa. And she gets disgusted and frustrated. And so, unless there's a, you know, a special group [of apps] that you can just say, you know, open the senior app, and I want to talk to me about music. I don't [see how it could be used]."* P7 shared their perspective about why using voice technologies might be challenging due to privacy concerns, *"I think the main purpose for it [voice technologies] was to help people with disabilities or maybe try to make life easier for people, in the fast-paced world that we live in, but then you had bad people get a hold of it and do bad things to it. It's just like that TicTok thing. It started out as just a way to communicate and get some information and now all of a sudden, you've got people collecting information. And there's nobody [that] should know anything about you unless you tell them and they shouldn't be getting it on their own."*

Despite some hesitancy about voice technologies, some participants shared that while they did not currently use voice technologies for social purposes, they envisioned that voice technology could assist older adults with visual disabilities to connect socially in the future. P1 shared their vision of an assistant that could provide information and help people connect. They stated, *"The keyword is shifting you [the user] as though you have an assistant. And once you want to ask the question, and your system will ask the question, it is seducing you, and what you can learn something he can assist you in learning something, information that you want, it can assist you in information, it can assist you in connecting with other people, it can assist you in going to a certain place or knowing about*

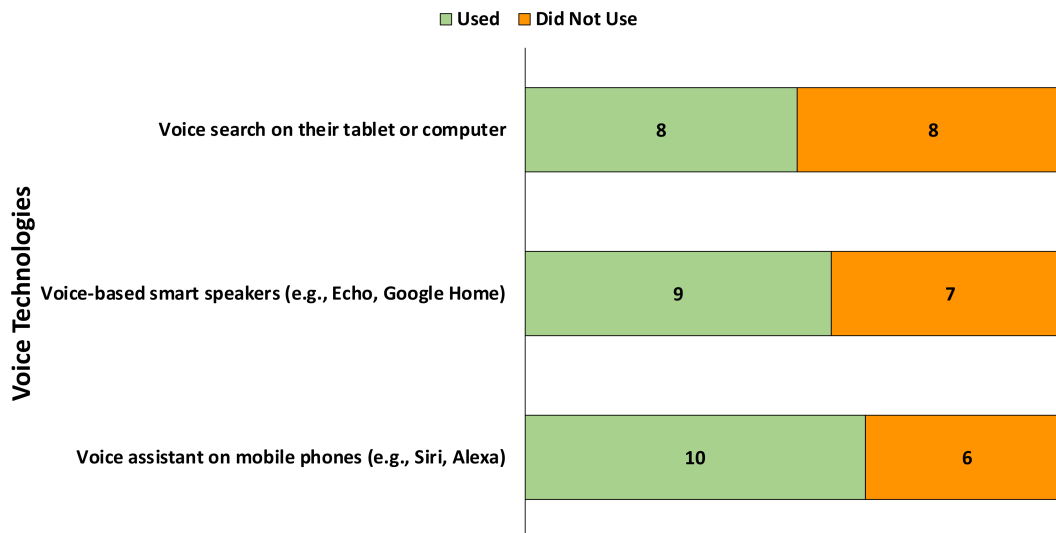


Figure 1: Participants' Current Use of Voice Technologies

a place. The assistant is definitely there. For older persons, we need that assistance because they're not able to do it on their own." Participants also shared that voice-based technology could be useful for helping people become aware of group social events happening in the community. Two participants mentioned that they envisioned that while they feel it is not there yet, voice technologies could work as mass media to share news about community events and to learn new things. One participant shared that he envisioned a chat-based voice system as a medium to spread awareness, educate people about new technological trends, and eventually connect with others. P5 shared, "I think it could be if the people, I mean, like if people like us blind people will get on a chat line. And we'll talk about hey, like, let's say this new device came out. So, we don't know sometimes and would like to talk about the new devices that come out. And so, we can educate each other on stuff like that."

Participants discussed what they felt were opportunities where voice technology could be used as a tool to help them keep up with the news about social events and make new connections. Their suggestions seemed to focus on ways that voice technologies could reduce some of the effort required to find, navigate, and engage in community social events which seemed to align with helping them with tasks they were currently doing manually using word-of-mouth or other technologies.

## 5 DISCUSSION

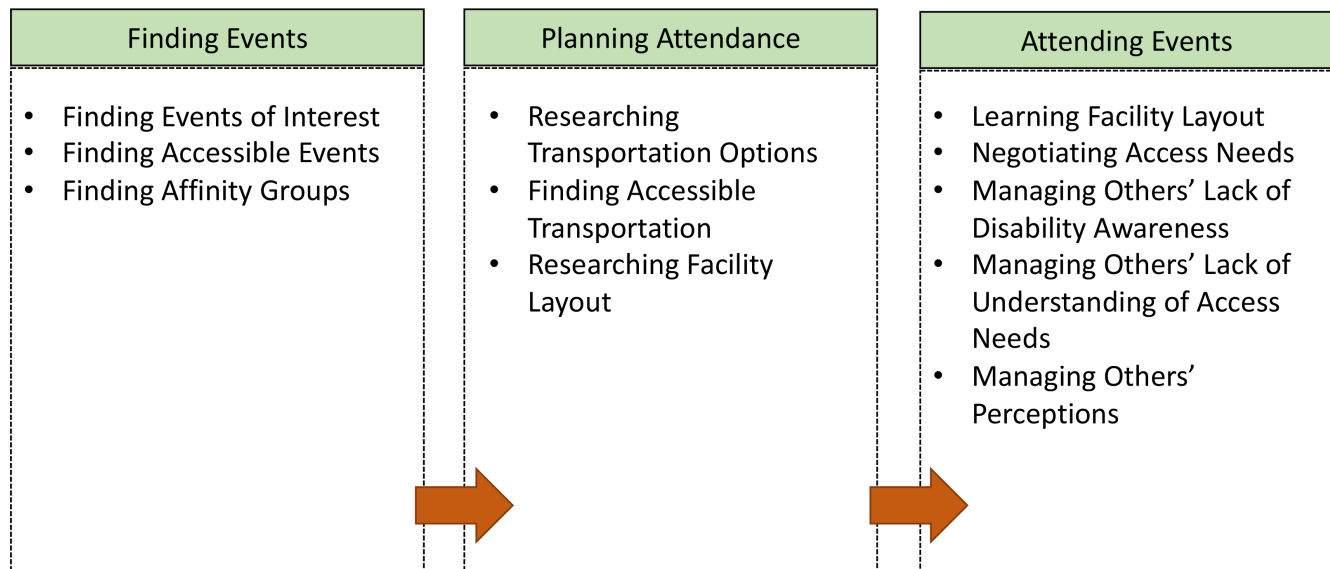
Our findings suggest that older adult participants with visual disabilities enjoy connecting with others and have developed strategies to engage socially over time; however, they still face some obstacles when connecting with others outside the home. Like other older adults, participants faced barriers to adapting to changing social networks as they age [52] due to moving or new caregiving roles. However, participants also shared experiences of engaging in additional invisible labor (Figure 2) when attempting to get involved in community and group social events to connect with others socially.

Based on our findings, we discuss potential design opportunities for supporting older adults with visual disabilities in managing the hidden labors of social participation and reducing access fatigue. We focus on opportunities for technology to address challenges related to some of the invisible labor shared by our participants.

### 5.1 Opportunities for Reducing the Invisible Labors of Disability and Social Participation for BVI Older Adults

Our participants shared that often, they face barriers in the process of finding and planning to engage in community social events. Some of the challenges shared are known accessibility challenges. Yet, our findings additionally highlight the potential costs and invisible labor associated with attempting to find and plan for social participation while also managing access needs as an older adult with visual disabilities. We discuss potential opportunities to better support BVI older adults with interrelated access and social needs to support mixed-ability social participation in community social spaces.

**5.1.1 Designing for Interrelated Access and Social Needs.** Participants shared some known challenges of social participation for older adults. For example, research has identified transportation challenges as a barrier to social participation among older adults and older adults with visual disabilities [51]. Researchers have proposed and studied several assistive technologies designed for people with visual disabilities that aim to reduce challenges associated with navigating within the community by foot or vehicle [6, 42] as well as those that help individuals navigate indoor spaces [3, 4]. Therefore, the challenges people with visual disabilities face when traveling outside the home are well-known. Yet, our findings also highlight the importance of supporting not only social needs but also accessibility when encouraging community social participation among BVI older adults.



**Figure 2: Summary of Invisible Labors Older Adults with Visual Disabilities Experience when Engaging in Community Social Events**

For our participants, access needs for social participation were closely intertwined with social needs as participation in community social events often depended heavily on whether access needs could be met during the planning process as well as when attending. Yet, many technologies they leveraged were disjoint, creating a burdensome experience. We found that planning for participation in community social events is layered and complex, yet currently, participants must manually bring together several ad-hoc resources and systems to address both needs. They may use social media to identify a potential event to join and use the Internet to identify transportation options but may need to navigate to another website to research whether the option they chose is accessible and another website to try to determine if the location of the event is accessible. These additional steps contribute to the additional burden of planning and attending community social events for BVI older adults. Therefore, designers should consider the *multiple components associated with community social participation for BVI older adults to design more holistic solutions that can address challenges related to hidden labor*.

One potential design consideration is to *provide more integrated technology solutions that address both accessibility and social participation needs*. For example, designing a mobile or web platform for BVI older adults where community members can post relevant events that are fetched automatically from supporting applications like Facebook, online meetup pages, or Eventbrite (which users are already using). The platform could send notifications about the events, educational classes, or activities happening per user's location in an accessible format as well as share accessible transportation options and information about the layout of the location. Therefore, like the planning process that considers both social and access needs, the technology supports and helps facilitate planning

both. Instead of addressing one need, the application can *address interrelated social and access needs, reducing the amount of time needed to find, plan, and participate in community social activities*.

**5.1.2 Designing to Support Inclusive Social Events through Education and Training.** Our finding suggests that community events that target older adults sometimes do not take access needs into consideration, leading to access fatigue. Because of this, older adults with visual disabilities find it difficult to participate. This finding suggests a potential lack of awareness or resources among those who host community social events on how to welcome and engage older adults with disabilities in these spaces. Therefore, designers should explore *opportunities to further support education and training on how to offer inclusive social events*. One potential way to address these challenges is through open-access, online educational training or materials so that hosts can become more aware and identify ways to make their events more accessible and inclusive. Given that some community social groups or clubs may not have the necessary resources [56] to support additional training due to their grassroots nature, providing easily accessible and targeted options to learn and potentially work together with others online could help to promote more inclusive community events. For example, there could be modules where hosts can learn how to welcome BVI older adults or virtual agents that address topics such as stigma or awkwardness that may come from these interactions. Virtual agent tools such as these have been used in other spaces to help improve other types of social and communication interactions, such as between healthcare providers and patients [13, 23], students in preparation for future employers [40], and even among older adults [21, 75]. Hosts can learn about accessible communication, such as providing information about the layout of the facilities to help BVI older adults navigate the environment more easily. Depending on

the nature of the event or social gathering, hosts can also learn how to promote social participation by arranging activities or helping seniors introduce themselves to each other.

**5.1.3 Designing to Support Mixed-Ability Social Engagements.** Our findings also suggest broader societal challenges related to the impact of disability on social engagement. Our participants shared that repeatedly, they would need to engage in the invisible labor of mitigating others' perceptions of them and their disability, such as trying to make others comfortable or worrying about how they are perceived by others when attempting to connect. They also shared experiences where they felt excluded because organizers or hosts of social activities in the community were not trained on how to include people with disabilities in those activities. Because of this, some admitted that they are sometimes discouraged from participating and elect not to join social activities due to the additional burden. These findings align with work in disabilities studies that have examined the hidden labor [61], and access fatigue [43] associated with managing others' perceptions, which often individuals with disabilities experience when engaging with others. Scully [61] describes approaches to remedying this invisible labor as the work of balancing the power differential present in social interaction between those with and without disabilities so that those with disabilities are not bearing the brunt of the physical and emotional labor of managing social interactions. While some of the challenges may require changes within local communities (e.g., more available resources for community organizations targeting seniors) to encourage more social participation for older adults with visual disabilities, we additionally reflect on how socio-technical interventions might help to work toward balance in mixed-ability social interactions.

The challenges and opportunities of providing mixed-ability spaces for collaboration have been documented in accessibility literature. Brady and colleagues have explored how to design better workplaces that support collaboration among BVIs and sighted individuals [39]. Similarly, for BVI older adults, designers should consider *opportunities to support navigating and participating in mixed-ability social spaces*. There has been quite a bit of research examining tools that can support BVIs in understanding indoor navigation and other indoor spaces [3, 4, 33, 38]. Using Bennett, Brady, and Branham's *interdependence as a frame* [9], Vincenzi and colleagues [76] suggest that in sighted guiding partnerships, both parties work together (i.e., *co-constitute*) space that can be navigated together. Our findings suggest there may be additional opportunities to *explore technologies that can act as a collaborator or facilitator before or within social events to enhance accessibility*. For example, tools that can help blind and visually impaired older adults and sighted older adults engage in social activities collaboratively or technologies that can augment the experience to make the space more accessible.

## 5.2 Limitations and Future Work

The BVI older adults who participated in our study self-identified with interest in being social, and many enjoyed group social activities. All participants also resided within their local communities as opposed to formal senior living. Therefore, their perspectives and experiences may differ from other older adults who may have

different personalities (e.g., identify as an introvert), living situations, experiences with depression or social isolation, and levels of social engagement. Future work will examine the perspectives of a broader group of BVI older adults and aim to include individuals with different levels of social participation.

Because our work is qualitative, we aim not to generalize our findings [25]. However, our work is limited by our participant demographics and other factors, which may affect the transferability of our findings to certain other contexts. For example, over half of our participants were younger-older adults (60–64 years to 70), and their perspectives may differ from older-older adults who may be navigating different life phases, such as retirement. The work is also limited by the recruitment process, which relied on digital means (e.g., online listservs and forums) to disseminate study information, assuming a certain level of digital literacy from potential participants. Using digital recruitment methods likely excluded potential participants with less digital literacy. Also, it may have excluded those participants more likely to struggle with social engagement due to limited digital literacy.

## 6 CONCLUSIONS

With aging, older adults, including those with visual disabilities, often face barriers to social participation and connecting with others. To understand the experiences and challenges of BVI older adults, we conducted one-on-one interviews with 16 blind and visually impaired older adults (age 60 or older). The interviews focused on understanding the experiences and challenges of BVI older adults in managing community social participation and their use of technology to help them overcome challenges. The findings from our study suggest that older adults with visual disabilities desire to participate in community social activities to connect with people, share news, and gain knowledge from others. Yet, it is sometimes challenging for them to find people to connect with who have common interests, and they also sometimes face challenges participating due to societal constructs that introduce additional obstacles. Based on our findings, we discuss the design opportunities to lessen the hidden labor of social participation for older adults with visual disabilities. Our exploratory research findings can be leveraged to inform future technologies to support older adults with visual disabilities in social participation.

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