Multi-stakeholder Perspectives on Digital Tools for U.S. Asylum Applicants Seeking Healthcare and Legal Information

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There is a concerning lack of clear and accurate information around accessing public benefits for asylum applicants in the United States (U.S.), which has been shown to negatively affect their healthcare engagement. Digital tools such as websites and mobile applications can be a potentially promising way to disseminate public benefits information to asylum applicants. The goal of this study is to understand the current informational needs of asylum applicants in the U.S. seeking legal information and resources regarding their individual rights to public health benefits and services. Through semi-structured interviews with 24 asylum applicants currently in the U.S. and 13 healthcare and legal professionals working with asylum applicants and other immigrants, we identify four key challenges and barriers to using currently available digital tools: information uncertainty, accessibility, emotional barriers, and contextual sensitivity. Our findings highlight the importance of considering multiple stakeholders' perspectives when designing tools within the immigration informational space. We provide targeted design recommendations to create digital tools for asylum seekers and the stakeholders who support them.

CCS Concepts: • **Human-centered computing → Empirical studies in HCI**.

Additional Key Words and Phrases: Refugees, Asylum Seekers, Digital Health, HCI, Immigrants, Semi-structured Interviews, Qualitative Research, Information Technologies

1 INTRODUCTION

The U.S. has the largest and most complex immigration system in the world [16]. Several million people enter the U.S. each year temporarily in over 30 nonimmigrant visa categories. Each year, several hundred thousand people obtain permanent resident status, also known as green cards, in 10 different immigrant visa categories [47]. Altogether, 44.8 million foreign-born residents live in the U.S., accounting for 13.7% of the total U.S. population [12]. One way to obtain permanent

resident status in the U.S. is by applying for asylum. To qualify for asylum, a person must have a well-founded fear of persecution and meet other requirements. In fiscal year 2019, the most recent year for which statistics are available, over 46,500 people obtained asylum in the U.S. [48]. Additionally, the term refugee refers to asylum seekers who have been granted asylum status [29].

Asylum applicants and other immigrants face many challenges transitioning to the host country, including health risks and the need for social services [45]. These risks are exacerbated for vulnerable subgroups of immigrants, such as pregnant refugee women, who are at increased risk for perinatal and antenatal complications [2] without proper medical care. Long established federal rules have sought to limit immigrants into the U.S. if they would become a "public charge" requiring public assistance [18]. Changes to these rules proposed in 2018 and finalized in early 2020 further compounded challenges by threatening immigrants already in the U.S. if they used public benefits such as Medicare or the Women, Infants, and Children Program [35]. These changes had a chilling effect among immigrants, resulting in disengagement from health systems[28, 37]. While these changes were later halted, evidence suggests that while they were in effect, immigrants were dis-enrolled from public benefits such as the Supplemental Nutrition Assistance Program (SNAP), formerly referred to as food stamps [9, 46]. The impact on children is well-defined: children under five whose parents lose SNAP benefits have been shown to experience a sustained negative health impact from ages 6 to 16 [20]. A compounding problem is a lack of clear and accurate information on the public benefits that immigrant populations can access and use. A recent report [9] found that although immigrant families were most likely to trust government agencies and legal professionals for information about how using public benefits would affect their or a family member's immigration status, few reported actually getting information from these sources. On the other hand, immigrant communities widely use digital tools such as websites to access information on a range of other topics, such as job opportunities, services availability, and health conditions [3]. This suggests that digital tools could provide a potential solution to supply timely and relevant information about asylum applicants' legal rights in the U.S. and counter false narratives around detention, deportation, and family separation.

In this paper we seek to understand the potential of digital tools for supporting informational needs of asylum applicants in the U.S. seeking legal information and resources regarding their individual rights to public health benefits and services. Specifically, this work aims to identify the challenges and needs of asylum applicants in finding sources of information that they perceive as reputable, comprehensive, and accessible; and explore how digital technologies can address these needs.

To explore this broad scope of factors that can shape information-seeking needs and experiences of asylum applicants within the U.S., we draw on perspectives from both asylum seekers and professionals (legal advocates and healthcare providers) who support them. The two guiding research questions include:

> RQ1: What information-seeking challenges and needs do asylum applicants in the U.S. encounter when seeking information about public benefits through digital resources?

> RQ2: How can technology be used to bridge the gaps between U.S. asylum applicants' information-seeking needs and available resources about public benefits?

To do this, we used a two-fold qualitative method approach: face-to-face interviews with asylum seekers, and online interviews with legal and healthcare professionals who work with asylum seekers and other immigrants across the U.S. The Methods section outlines this two-stage approach by first describing participants' characteristics and the data collection and analysis strategies for interviews with 24 asylum seekers, followed by a similar description of participants and the

interview process with 13 professional stakeholders. The emergent themes from both interview stages are integrated in the Findings and Analysis section. While many of our findings can apply to the broad category of people without citizenship currently residing in the U.S. who can be described with the term "immigrant" (e.g., asylum seekers, migrant workers, undocumented people, those with deferred action for childhood arrivals (DACA) status, green card holders, and lawful permanent residents), the focus of our study is on asylum applicants or asylum seekers reflecting the characteristics of our sample and their specific needs and circumstances.

In trying to navigate this complex ecosystem and address personal health needs, asylum applicants rely on healthcare workers and legal services for support and care. However, given the complexity of navigating policy and benefits across state lines and family structures, we investigate the resources that professionals need to support asylum applicants and other immigrants and discuss how a shared digital resource can benefit stakeholders to streamline care. Through interviews with both asylum seekers and the legal and healthcare professionals that support them, we identify four major challenges to finding and using currently available information sources: informational uncertainty, emotional barriers, accessibility issues, and contextual sensitivity. Finally, we outline several design recommendations to consider when designing digital informational tools for asylum applicants and the providers who support them.

2 RELATED WORK

Designing with and for Asylum Applicants and Other Immigrants

The human-computer interaction (HCI) community has an expanding interest in understanding the complex socio-technical systems that impact immigrants globally and how the design of technologies can engage immigrants in healthcare systems by helping them manage appointments [8], connect directly with healthcare providers over text [36], and receive antenatal care [45]. Additional studies have looked at how technologies such as social media[55] and online language systems [51] can facilitate communication for refugees and increase social support across different countries including Jordan [56], the U.S.[11], and Palestine [57].

Overall, researchers have emphasized that when designing for immigrants, the specific situational contexts of immigrants as well as their communication practices and habits need to be considered. Some of these considerations include refugee health beliefs and experiences, literacy levels, and refugee perceptions of negative attitudes of healthcare providers [44, 45]. It has been proposed that due to low English literacy and cultural barriers among new immigrants, elements such as visualizations, multilingual interface, and privacy need to be included when designing for immigrants [5]. Many researchers have also considered the best practices in designing technological systems with immigrants with a growing emphasis placed on participatory design methods. This includes studies with immigrants examining their involvement with designing technologies supporting long-term adjustment in a host country [4], creating safe spaces for immigrant youth through consideration of the ethics and dynamics of design workshops [13], and the development of specifically youth-focused approaches to design through workshops conducted within refugee camps in Jordan [21].

Immigrants' Informational Needs and Available Digital Resources

Connectivity and Access. Although there has been a growing interest in designing for immigrant groups and a corresponding increase in digital tools geared towards them, accessing these tools can be a challenge for immigrants. Prior research highlights that immigrants often face affordability and connectivity barriers when accessing the internet [30, 50]. Access to the internet via Wi-Fi or SIM-cards is not always available, especially for those in temporary or precarious housing circumstances.

Even when immigrants can gain initial access, maintaining this access can be difficult. Maintenance and replacement of hardware can be expensive, and using publicly available internet networks leaves migrants vulnerable to disruptions in their access [30]. For example, Alam and Imran [1] found that income, mobility, and availability greatly constrained digital technology usage among migrant groups in Australia. They also found that newly arrived immigrants experienced major barriers to internet access and use due to the lack of affordability, language differences, and low levels of general literacy. Similarly, Bacishoga et al. [7] showed that cost and access to mobile phones by refugees in South Africa shaped their potential use of these technologies.

Additionally, low levels of digital literacy among immigrants, as well as linguistic and cultural barriers, can hinder immigrants' abilities to use technology to gain information efficiently [3, 24]. Alam and Imran [1] identified a "digital divide", or a gap between people able to use the internet and those not able to, among refugees in Australia, which was greatly impacted by individual-level language skills. Similarly, Lloyd et al. [32] observed that a lack of digital literacy skills, coupled with a lack of language competency among refugees, limit their ability to deal with information efficiently. This impacts their social inclusion into the host country's society.

However, it is important to not view immigrants as a monolithic group or to apply normative frames of digital exclusion on all immigrants. For example, Yerousis et al.[57] highlighted Syrian youths in Jordan who creatively access and co-opt online technologies, assisting their family through online access to information and contributing to their household income through paid online employment. Similarly, McCaffrey and Taha's [33] study examining technology use among Middle Eastern new immigrants in New Jersey, U.S., found a high level of mobile phone access and use in refugee households. They propose that host countries need to be able to adapt to also consider and adapt to such highly digitally literate immigrants' needs. The attitude and behavior of a country towards new immigrants play an important role in how newcomers access, and subsequently use, mobile technologies. For example, facing social discrimination can lead to a greater reliance on mobile phones for assistance, and as a way to avoid direct interactions with the local community [3].

Privacy and Surveillance Risks. Immigrants face a great deal of uncertainty when interacting with information dissemination systems [52]. Trustworthiness is a major factor influencing immigrants' engagement with technology [14]. For example, while various Non-Governmental Organizations (NGOs) have developed specific websites and apps for immigrants [25], Dekker et al.'s [19] study found that none of the migrants they interviewed mentioned using such sites because either refugees were not aware that such sites were available, or they did not trust them. They also found a preference towards social media information that originates from existing social ties (e.g., Facebook groups of fellow immigrants) noting that *"Knowing and trusting the source of online information is an important factor in trusting that information"* [19].

Fear of government surveillance has been identified as a significant barrier to trust in online resources among immigrants. Costanza-Chock [17] found that privacy and security concerns about technology use are especially salient for immigrants compared to the general population. Social media and smartphone data leave immigrants susceptible to new forms of, and opportunities for, digital surveillance [50]. Thus, using mobile devices and social media becomes a risk to unwanted surveillance by state and non-state actors. Some researchers have found that refugees may adopt online strategies to navigate these risks, for example, by using pseudonyms and avatars [25]. On the other hand, in a study examining the online behaviors of Muslim-Americans, Sidhu [41] found that despite widespread belief that their online activities were monitored by the U.S. government, few altered their online behavior to address these concerns. Undocumented immigrants are especially

vulnerable to online surveillance and harmful exposure. Guberek et al. [27] noted that for undocumented immigrants, online risks are in many ways collective, as information disclosed online, either deliberately or inadvertently, can have implications and repercussions for other undocumented immigrants in their families and networks and vice versa. However, they [27] also found, through interviews with undocumented Latine immigrants, that many immigrants do not take significant steps to protect their online privacy, despite the threat posed by online information disclosures. One of the reasons identified was that the potential benefits afforded by smartphones and social media were viewed to be indispensable: their use outweighed potential risks.

Despite a growing body of work examining the use and design of digital technologies for immigrants, most of it has been conducted outside of the U.S. [6, 21, 57]. This study seeks to fill this gap in the literature by exploring the information-seeking needs and experiences of immigrants within the U.S. since the U.S. has the largest and most complex immigration system in the world. We specifically focus on asylum applicants and their information seeking for legal and healthcare needs because there is a lack of reliable and accessible information in these areas. Yet this information is vital to asylum applicants' lives and well-being.

Furthermore, we expand upon the previous literature by drawing upon design perspectives from both asylum applicants and providers working with asylum applicants and other immigrants. Relatively little work has examined designing shared digital tools for legal and healthcare professionals who work with immigrants compared to the aforementioned literature examining designing for immigrants. Tachtler et al. [43] explored designing within a social-ecological model of resilience to support volunteers working with unaccompanied migrant youth. Interventions based on this model, including digital tools, must be targeted at different factors within the larger social ecology including the individual, school, family, community, and societal levels. This model points to the need to account for structural and contextual influences, such as political regulations and culture, when designing technologies for volunteers working with migrant youth, given their impacts on all other levels such as the physical and social factors.

3 METHOD

Interviews with Asylum Applicants

Participants. Purposeful sampling techniques were used to identify and recruit 24 asylum applicants (age 18 or older) between March 2021 and May 2021 from the Weill Cornell Center for Human Rights (WCCHR), which provided study referrals to the research team. Data saturation, or the point in the process when no new information is being discovered in data analysis [26], was reached with 24 participants. Of the 24 participants, 14 were women, 7 were men, 1 was gender non-conforming, and 2 participants declined to answer the question about gender. 10 participants self-identified as single, 10 participants reported that they lived with their children and 13 of them stated that they lived with one or more relatives.

Participants represented 18 countries of origin, with 9 immigrating from Central America (i.e. Honduras, Guatamala, El Salvador), 5 from South America (i.e. Venezuela, Chile), 4 from West Africa (i.e. Cameroon, Guinea, Ghana), 3 from Asia (i.e. Nepal), 1 from the Caribbean (Jamaica), 1 from Southeast Europe (Turkey) and 1 from North Africa (Egypt). 10 participants self-identified as Hispanic. Only 3 participants identified English as their primary language, with 11 identifying Spanish as their primary language, 2 identifying French, and 8 identifying other languages. The year of entry to the U.S. ranged from 1985 to 2019. Nine participants were currently applying for asylum, 9 had received asylum, and 6 had previously applied for asylum.

17 of our participants reported having earned a high school degree or higher and 7 had less than a high school degree. 7 had completed high school, 1 had an associate degree, 2 had some college, 6

had completed college, 1 had a postgraduate degree. Of the 24 participants, 11 were employed at the time of their interview. Of those participants who were employed, 6 worked in the healthcare industry, 3 worked in housekeeping, and 2 worked in another areas.

Ethical Considerations. In reporting findings, we have taken steps to ensure the anonymity of all of our participants. In some cases, we have paraphrased to remove potentially identifiable information. Participants received a consent form that described the purpose of the study, the topics that would be discussed, and the voluntary and confidential nature of participation. Asylum applicants who did not speak English reviewed the consent form with a translator. All participants consented to the sessions being audio-recorded. All studies were approved by the Institutional Review Board (IRB).

Data Collection. Interviews of the 24 asylum applicants were conducted in-person in English (n=10) or the subject's native language (n=14) using a phone interpretation service offered through Pacific Interpreters, LanguageLine Solutions. All interviews were conducted at the Weill Cornell Center for Human Rights (WCCHR) site in New York City. After providing oral and written informed consent, the 24 participants provided demographic information and then answered a series of questions related to their knowledge and use of public benefits, their technology use, their trust in online sources, and their general information access. Although not obliged to disclose, all participants provided their immigration status. Interviews lasted 45-75 minutes and with participants' permission were audio recorded and transcribed. Participants received a $60 gift card for their time upon completion of the interview. This amount was suggested by the research collaborators based on prior experience working with this population. The audio recorded interviews were transcribed verbatim. Identifying information was removed from each transcript before analysis and then saved on a password-secured computer.

Data Analysis. The 24 interviews were imported into the qualitative analysis software Dedoose [42] for coding and analysis. A thematic coding scheme was created based on: 1) the main questions of the interview guide, some of which had clear categorical responses (See Findings and Analysis Section); and 2) emergent themes from open-ended qualitative responses. For the non-categorical items, the research team reviewed the transcripts and identified emergent themes in the qualitative responses, and then, through discussion, developed the final set of codes. Two members of the research team coded each transcript. Discrepancies in codes were discussed until consensus was achieved. Following this coding, four researchers identified the dominant themes that emerged from the data.

Interviews with Professional Stakeholders

Recruitment. Between July and November 2021, we conducted in-depth interviews with legal and healthcare professionals (n=13) working with our target population across the U.S. Participants came from two groups, both of whom worked with asylum applicants and other groups of immigrants: 1) legal professionals (i.e., lawyers, advocates, legal policy experts) (n=6), and 2) healthcare professionals (i.e., doctors, therapists, social workers, psychologists) (n=7). We used snowball sampling, utilizing referrals from previous participants, to recruit participants from both groups. Additionally, to maintain anonymity for the professionals with whom we spoke, we have chosen not to disclose their organizational affiliations.

Data Collection. The interview guide covered three main topics: (i) challenges faced by asylum applicants and other immigrants, especially around accessing public benefits, (ii) experiences and challenges faced by legal and healthcare professionals when disseminating information to asylum applicants and other immigrants, and (iii) utilization by legal and healthcare professionals of, or difficulty in finding, digital tools designed for asylum applicants and other immigrants that

addressed legal rights to healthcare benefits. The interviews with professionals were conducted over Zoom and varied between 25 and 40 minutes, with an average of 35 minutes. At the beginning of each interview, participants were ensured of their anonymity and were asked for their consent to audio-record the conversation.

Data Analysis. We used a constant comparative method to analyze the collected qualitative data from both interviews with asylum seekers and legal and medical professionals in three iterative cycles. To analyze the transcripts, we used an inductive bottom-up thematic approach [10]. We followed a descriptive coding method [39] for the first and second iteration, which resulted in inductive emergent categories [22]. Two members of the research team coded each transcript. After two rounds of coding, a codebook was formed. Discrepancies in codes were discussed until consensus was achieved. Our final codebook consisted of 23 codes. Following this coding, two researchers identified the dominant themes that emerged from the data.

4 FINDINGS AND ANALYSIS

Four major barriers and challenges to accessing existing online tools in the asylum applicants and benefits space were identified through interviews with both groups. They were categorized as challenges with informational uncertainty, emotional barriers, accessibility barriers, and contextual sensitivity. Along with the existing challenges, both asylum seekers and professionals also identified potential ways technology can bridge the gaps between asylum applicants' needs and available digital resources.

Categorical Data from Interviews with Asylum Applicants

In general, participants frequently used internet technologies in their everyday lives (See table 1). Of the 24 people interviewed, only one person did not use the internet due to insufficient literacy. On average, people used the internet for 5-6 hours a day. Of those who used the internet, 19/23 participants (82%) used social networking sites, 6/23 (26%) used email, 13/23 (56%) browsed the web, and 4 out of 23 (17%) used Zoom or Skype. Some activities that participants mentioned included connecting with friends and family, watching the news, and using the internet to take online classes and learn English. Additionally, 22/23 (95%) participants accessed the internet through a cellphone, 10/23 (43%) participants mentioned using a laptop, and 2/23 (8%) used a tablet.

With respect to device sharing, 17 participants did not share their device with anyone, whereas 5 people did share their device, with 4 sharing with a family member and 1 sharing with a friend. They did not indicate needing help to access the internet for their day-to-day activities, but some people stated that they received help from friends and family to set up WiFi or data connections. Finally, 20/23 participants accessed the internet through WiFi and 16/23 had a data connection.

Informational Uncertainty

A recurring challenge mentioned across interviews with both professionals and asylum applicants was the uncertainty that the latter faced when accessing online information. Informational uncertainty arose due to underlying issues with the accuracy of information and lack of trust in the source of the information.

While immigrants recognized the abundance of online information, with its ease and low cost of access, they reported difficulty in identifying information accuracy, which complicated their understanding of how to apply it to their personal situations. Information could be inaccurate by being out of date, or purposefully deceitful to scam or influence them. Three participants described instances where either they or a person they know were scammed by someone online while

Table 1. PARTICIPANT INTERNET USE (out of 23 participants)	
Internet uses	
Social networking sites	19
Web browsing	13
Zoom or Skype	4
Internet access (device)	
Cellphone	22
Laptop	10
Tablet	2
Internet access (connectivity)	
WiFi	20
Cellular data	16
Device Sharing	
Did not share with anyone	17
Shared with family members or friends	5

searching the internet for benefits or services. For example, one immigrant outlined a time they were susceptible to such a scam:

> *"I wasn't born here. So, I don't know if a website is from a real place, because that happened to me some time ago. I was checking, I needed to check my driving record here. And I went to a link, and it was a scam."*(P5, Asylum Seeker)

Many immigrants shared accounts of their challenges in discerning if a website was reputable due to the fact that there is not a shared understanding of markers that indicate a government website. They described that they were not familiar with identifying website urls and often followed links that in retrospect resulted in deception.

Professionals also had shared concerns about a large amount of misinformation circulating among asylum applicants and other immigrants regarding public benefits. A lot of misinformation was described as originating from within immigrant communities, making it difficult to combat. Such false information was also identified as circulating widely through social media networks, potentially contributing to hesitancy in accessing public benefits information online among immigrants. Furthermore, some of these accounts shared with us included misperceptions and inaccurate information. One legal professional shared an example of such a misperception,

> *"one's child having to join the military if you access medical benefits and having to pay back the value of food stamps with interest."* (P36, Legal Professional)

Often these misperceptions arose from trusted ties within these close communities where this type of information was perpetuated and not challenged until the asylum applicant sought professional guidance.

A related challenge identified by professionals was ensuring that the information disseminated *"on a website or application is accurate and timely"*. Legal experts emphasized that there can be huge consequences to providing inaccurate information, including detrimental impacts to people's immigration cases. There are also updates and changes that can occur unexpectedly within the

law, especially when there are changes to the political administration, federally or at state levels. Therefore, online information needs to be consistently updated and flexible to change. Professionals recommended that digital tool creators have a process in place to address necessary changes as they occur.

Another source of informational uncertainty concerned the lack of trust in information sources, rather than a lack of information per se. In fact, "lack of trust" was cited as a recurring concern underlying many of the challenges experienced by immigrants seeking accurate information. Throughout our interviews, many professionals recounted that asylum seekers and other immigrants perceived larger immigration systems as marked with hostility leading to mistrust in the information they supply. One legal professional told us,

> *"The problem is our target audience is mistrustful and there's a lot of rumors and...just like with this vaccination thing they, it's, got to come from a trusted person, and that oftentimes means one or even multiple touches from various places before they feel like what you're telling them is true."* (P27, Legal Professional)

Participants used several different methods to determine the accuracy and trustworthiness of online information, such as checking the source. Website URLs ending in .gov or .edu were considered more trustworthy. By contrast, information on Facebook, Twitter, or other social media was generally considered more dubious. An immigrant stated,

> *"It's just a common practice for me to search everything on the internet. But the thing that would make it like, accurate or not, is the source of information. For example, if I'm looking for a legal term, I want to trust a court website, rather than Wikipedia or something."* (P23, Asylum Seeker)

Many of the healthcare and legal professionals explained to us the importance of helping asylum applicants and other immigrants obtain accurate information. They shared that the cues that indicate a website is official can also present complexities and heighten concerns. This was especially apparent in situations in which a government site was both a trusted resource from the perspective of the legal or healthcare professional but created concerns for some immigrants. The trustworthiness of government sources was a point of concern because while some asylum seekers and immigrants identified governmental sources as reliable, others showed hesitancy around government sites.

A healthcare professional outlined such distinctions to us,

> *"Sometimes people want to see a health and human services official county seal in order to be like okay the government told me that I'm allowed to access this website but other times for the same person, associations with the government can make them nervous."* (P34, Healthcare Professional)

This tension further highlights the varying and context-specific nature of what is trusted. Similarly, trust was described to be dependent not just on the source of information but also on the nature of the information being shared. For example, while government websites may be considered a good place to get information about medical benefit eligibility, community organizations could be more trusted to provide assistance in accessing food stamp benefits like SNAP.

Immigrants also talked about combining sources in an attempt to collate information, as well as using close trusted sources such as friends, family, or other persons to help verify the accuracy of information they found online. Using offline resources or community groups for asylum seekers to verify information found online was another strategy mentioned by many participants. One of them stated, for example,

"[After seeing online information] *I go directly to other persons, because in regard to the computer, I don't even always understand or trust it. I always go to other people or places that I know exist, where they speak Spanish.*" (P9, Asylum Seeker)

In the same vein, community-based organizations and resources, particularly those targeted towards immigrants, were seen as generally trusted sources of information. These groups were described as places where other sources of information, especially online information, could be validated. As one legal professional shared with us,

"*There are immigrant communities that already like their hub, they have their trusted places where they go to get information. And so if there's like a resource or a need they'd probably be going to like the location that's like really really close to them, and who they trust the most to get resources, like community groups that are welcoming to immigrants. However, who is considered to be a trusted source can also depend on the type of information.*"(P25, Legal Professional)

Interviews with both groups illuminated that the existing online informational landscape available to asylum applicants is rife with uncertainty. This uncertainty arises due to difficulties assessing the accuracy of available information, exacerbated by the prevalence of misinformation within immigrant communities, and potential lack of trust in online informational sources.

Emotional Barriers

The second major challenge described by both asylum seekers and professionals was overcoming emotional barriers to accessing online benefits information. A main emotional barrier identified by professionals and asylum seekers was fear, especially in relation to data privacy, security, and surveillance. Another significant barrier identified by both asylum seekers and professionals is stigma related to utilizing public benefits and narratives around immigration.

Fear. Asylum seekers shared that fear was the main reason preventing them from accessing benefits.In particular, many people are afraid to draw attention to themselves and their families by accessing benefits information online. Safety emerged as a principal concern throughout our findings. Public websites were identified as particularly concerning from the safety and surveillance viewpoint, as asylum seekers were afraid that any information they shared online would reveal their immigration status and that they would ultimately be a target to the government. As a result, asylum seekers often forgo searching online for public benefits information because it can jeopardize their legal status down the road. As one asylum seeker explained it, referring to public benefits as "a political issue,"

"*I stopped respecting [online benefits information]. Because it almost added a side that it became like, a political issue, because saying immigrants and taking benefit and this and that, and you're afraid that maybe it can affect what you could apply to later. Yeah, that is why personally I just stopped checking online for it. Because sometimes we are scared of applying for benefits.*" (P18, Asylum Seeker)

A similar concern about fear and safety, and perceived implications of sharing personal information with government sources, albeit in a broader context, resurfaced in interviews with professionals. They recognized immigrants' fear as a persistent barrier to accessing public benefits programs, which can be exacerbated by certain government policies or anti-immigrant rhetoric. As one legal professional explained,

"*Fear around immigrant access to programs is not new. it existed before the Trump administration, but the Trump administration made this sort of anti-immigrant rhetoric, the Xenaphobic narrative, worse for a lot of people. Even if immigrant*

> *households are absolutely 100% safe even if they have citizen children, they won't sign their children up for public programs because they don't want anything that has their name or address or something that might hint that they don't have status. So confronting fear for people to understand their rights to access some of these programs is key".*" (P32, Legal Professional)

In addition to general fears around applying for public benefits programs or accessing information online, asylum seekers and professionals noted fears around data privacy. Recognizing fears and sensitivity around data collection, professional stakeholders emphasized a careful weighing of pros and cons of digital tracking and explicit information gathering for digital resources geared toward immigrants. Professionals viewed immigrants' fears around data privacy to be justified due to the precarity inherent to the immigration system, especially for vulnerable immigrant groups such as those who may be undocumented. One healthcare professional explained the issue from the perspective of an undocumented immigrant,

> *"If I am undocumented, I'm not going to go to a website and click on a search option that says "I'm undocumented" right because I'd be terrified of who's taking that information, where's it going".* (P35, Healthcare Professional)

Professionals explained that many conventional technological interactions (e.g., entering personal information to assist with a targeted search) pose significant risks for asylum applicants and other immigrants. One legal professional emphasized reduction of information collection parameters,

> *"I think the critical thing is don't ask any questions that you don't absolutely need that information for right now cause everyone is scared and, there's a lot of information collection of inertia, like okay we were going to ask you your social security number because we ask everybody a social security number, even though we don't need a social security number, right, we're asking you your gender, maybe we don't even need to know if you're male or female, right."* (P30, Legal Professional)

Professionals mentioned that over-collection of data from immigrants by digital tools when they are trying to access informational resources is a problem. Oftentimes websites and other digital tools collect more data from users than is actually necessary to provide information, which can be particularly burdensome for overscrutinized groups like immigrants and fuel their fears about information searching and sharing data online. One healthcare provider explained the hesitation that immigrants may feel,

> *"I think I would be cautious not to ask questions that you don't need to ask just because people are reticent to share any information right now. And, and just too many questions makes it feel really overwhelming and scary, you know, and you're less likely to click through."* (P31, Healthcare Professional)

Stigma. In addition to fear, another key emotional barrier to accessing benefits is stigma. Accessing benefits can be stigmatized, even for non-immigrants. One professional, for example, discussed feeling conflicted about using emergency medical benefits that were available to them because they felt that those benefits are not "for people like me".

However, accessing benefits, both online and offline, was especially stigmatizing for asylum applicants and other immigrants. Narratives around "immigrants coming and taking our resources" have existed for many years, but have become especially pervasive in recent years. Asylum seekers discussed how harmful stereotypes about immigrants were widespread even within their own communities. Stigma was also mentioned as a reason for their personal hesitations to use public benefits that they were eligible for, even when they really needed them. One asylum seeker said, echoing the stigmatization narrative around immigrants and public benefits,

> *"Other immigrants told me the same thing, you know, you shouldn't rely on asking for any benefits from the government, if you want to be a citizen.... they look at you there you know like parasites so I don't want to feel like I'm a parasite".* (P12, Asylum Seeker)

Beyond just the larger national narratives around immigrants, the benefits system itself was seen as a source of stigma because of the process complexities and perceived lack of respect for applicants in the application process. One legal professional said, summarizing frustrations with the benefits system on the part of asylum seekers and other immigrants,

> *"There's so many hoops that people have to jump through when applying and people are being treated like criminals or suspects. People don't feel like it's a very friendly process, and that further stigmatizes their views that getting benefits is wrong because they're not treated with respect."* (P36, Legal Professional)

Professional participants highlighted that narratives describing the personal challenges around accessing available benefits differ between immigrant communities. For example, they told us that members of the Latin American communities who are undocumented are often more stigmatized for their use of benefits compared to other communities such as Asian immigrants that may face different immigrant narratives such as model minority myths, referring to the "positive" stereotyping of some minority groups as inherently, more intelligent, hardworking or successful compared to other minority groups [34].

As one legal professional pointed out, specifically drawing attention to the need to counter immigrants' own internalized stigma, especially among undocumented communities,

> *"What I have found in working with the immigrant community over the years is especially undocumented folks–and maybe this is just my experience working with the Central American community but– their default is to assume that they are not entitled to anything. Right, their default is to assume that somehow they're lesser people and they're not deserving, and they don't want to take away any resources from anybody else. They just want to keep their heads down and do their work. And when, when you can have a tool that can sort of flip the script a little bit, that's really powerful."* (P29, Legal Professional)

Accessibility

We identified two central accessibility challenges –lack of digital literacy and language barriers –that prevent asylum seekers from accessing existing informational digital resources. Almost all of the professionals mentioned that these issues were complicated and could be difficult to comprehend, even for domain experts. Immigration law and public benefits are both incredibly complex arenas; the intersection of the two therefore is all the more complicated. As one healthcare professional stated,

> *"All of us if we go look at our health and benefits packages through school or through work, you kind of almost need a master's in public health to understand what you're looking at."* (P35, Healthcare Professional)

Often these issues cannot be navigated by asylum seekers on their own, and talking to an attorney is necessary. We heard from many professionals that informational resources, including online resources, should encourage asylum seekers to connect with low-barrier access lawyers or social workers in their area to help them most effectively navigate their specific circumstances.

The problem of information accessibility is complicated by asylum seekers' lack of stable internet access and in some cases low digital literacy skills. Digital literacy and digital access were brought

up by many professionals as key barriers to information dissemination for asylum seekers and other immigrants. In contrast, our interviews with asylum seekers found that in general, most participants used a range of internet technologies in their everyday lives (See the "Categorical Data from Interviews with Asylum Applicants" section above). This reinforces the potential of digital tools as one place to augment immigrants' informational needs around public benefits.

Another major accessibility issue mentioned across all interviews was language. Most asylum seekers' first language is not English, and for many people it may not even be their second or third language. This is evident in our interviews with asylum seekers; only three participants stated their primary language as being English. Professionals highlighted the importance of translating all resources that are created, digital or not, into many languages. They recommended that all resources should be translated with the help of the community for whom they are created. This allows for local linguistic variations and contextual factors to be incorporated into translation efforts.

Related to the language barrier is the issue of general literacy. Some immigrants have low levels of literacy, especially in English, which can prevent them from understanding what public benefits they are eligible for and how to access them. One legal professional we spoke with suggested using images of immigration documents alongside the words to circumvent potential literacy barriers. Professionals stated that any information that is being conveyed to the public needs to be between a third grade and fifth grade reading level. As explained by one healthcare professional,

> *"Most resources are not even translated at what we think is the best level- anywhere between a third grade, and fifth grade reading level. That is the ideal for, I don't care if you're teaching somebody about cars, public programs, how to make YouTube or TikTok videos, you need it at this sort of literacy level in order for people to really be able to catch on to something."* (P33, Healthcare Professional)

Much of the currently available online resources were discussed as being overly complex for public use. Ensuring the accessibility of resources was thus identified as a multi-pronged challenge. On one hand, there is the challenge of having resources translated across many languages; on the other hand there is the challenge of conveying complex but important information in simple language for a non-specialist audience.

Contextual Sensitivity

The final overarching theme that emerged across professional interviews was the challenge of contextual sensitivity. Asylum applicants' informational challenges and the solutions available to them were described to be very dependent on the specific geographic and social contexts within which they are embedded. Eligibility requirements, the programs available, and communities impacted were described as all highly location dependent. Although some factors, such as immigration status, can operate at a federal level, details vary considerably by state. Even providers that we interviewed working specifically in the public benefits space have expressed hesitancy extending their answers outside of the state in which they worked.

We also found that many variations also exist at the community level. Professionals emphasized the importance of not treating asylum applicants and other immigrants in general as a homogeneous group when disseminating information. As one professional said,

> *"Just because you're working with a Haitian immigrant in the Bronx, it's not going to translate into being able to convince a Mexican immigrant in like, Arkansas."*
> (P28, Healthcare Professional)

Even asylum seekers immigrating from similar regions of the world may differ greatly depending on where they live in the United States. One legal professional we spoke with described how the words used to categorize immigration status can vary across groups. They recalled,

> *"I think it was that like the folks who are Spanish speakers in the northern half of the state, who have permanent residency, they say they have "residencia." Then the people in the lower half of the state who are Spanish speakers who have their green cards say they have "green carte", and they don't say "residencia", they understand it to be "green carte". They don't even have a name for their status in common"*(P26, Legal Professional)

To sum up, many of the professionals we interviewed cautioned against a "one size fits all" digital solution suggesting the need for contextual sensitivity both at the community and individual level to accommodate different life circumstances, healthcare needs, general and digital literacy levels, etc. They implored the use of creative forms of information dissemination that can be easily personalized and updated. They could take the form of a website or mobile application, but depending on the community context, could also expand to other online and offline forms. Comic books, zines, WhatsApp threads, and community workshops were also suggested as potential alternative modes of communicating public benefits information to immigrants.

5 DISCUSSION

This paper presents findings from two streams of data: semi-structured interviews with asylum seekers and interviews with legal and healthcare professionals working with immigrants, including asylum seekers. We find that the current technology information landscape poses numerous barriers for asylum seekers, especially with regard to information accuracy, accessibility, emotional barriers, accessibility, and contextual sensitivity. Below, we discuss the implications of these findings, provide specific design recommendations to help tackle each type of challenge, and outline limitations of this study.

Research Implications

We found that the current information landscape concerning public benefits eligibility for immigrants, especially asylum seekers, is rife with uncertainties related to both the accuracy of the information presented and the trustworthiness of the source of the information. Participants highlighted that there can be inconsistencies with what is determined by asylum seekers to be a trustworthy source, especially in regards to government sources. While some people may not trust an information source lacking an indication of government endorsement, such as ending in a .gov domain name, others may distrust government systems appearing to be connected to the government due to underlying surveillance concerns and fear of negative immigration repercussions.

While some researchers have suggested low levels of digital literacy among immigrants [1, 24], others have found high levels of digital competency and use of the internet [33, 57]. Our findings align with the latter body of research based on asylum seekers' reports of familiarity with and using different technologies in their daily lives (but not in professional stakeholders' eyes). Most of the asylum seekers participants in our study regularly accessed the internet, using a range of digital technologies such as social media platforms, online news sites, and video calling applications.Although the use of technologies is not equated with digital literacy, this finding does suggest that digital tools are a viable medium through which to connect asylum seekers with public benefits information. However, although immigrants were found to be present online, there were still language barriers to accessing currently available online information, especially for those speaking less commonly translated languages.

Beyond accessibility barriers, stigma and fear were also identified as major barriers both to accessing benefits generally and to accessing online resources more specifically, as identified by both asylum seekers and professionals. Sharing one's information online even to receive personalized guidance was perceived as a risk. Importantly, professionals described such fears as justified. This is in line with previous research [25, 27, 41] that found that refugees and asylum seekers are especially vulnerable to negative repercussions of data privacy breaches and susceptible to government surveillance through online technologies.

Due to the highly contextual nature of immigration-related rules and guidelines, barriers and challenges to using online information for asylum applicants were also identified to be highly contextually sensitive, depending on many factors, such as geographic location, immigration status, cultural background, and others. Asylum seekers are not a monolithic group. Thus, contextual sensitivity emerged as an overarching concern identified by professionals, with possible repercussions on the previously mentioned barriers of information uncertainty, accessibility, and emotional barriers. For example, as discussed above, some asylum seekers viewed a connection to government agencies as increasing the trustworthiness of an information source, whereas for others this could bring up surveillance concerns. Similarly, there is a huge range of languages spoken by immigrant groups even within the same region, and there can be variation in the specific terminology used by different communities (such as the difference between the use of the term residencia and green carte in amongst Latin communities). Finally, emotional barriers such as stigma and fear can be differentially felt by between communities based on complex socio-cultural factors and intersectional networks of power.

Some of the barriers that we identify faced by asylum seekers when finding information online, such as issues with trust, accessibility, and data privacy, align with previous research findings within the immigrants and HCI space [3, 19, 27]. However, prior research has mainly focused on these issues from the perspective of immigrants, rather than considering additional stakeholders such as service providers. By expanding the scope of perspectives to include those of legal and healthcare professionals, in addition to asylum seekers that they support, we were able to gain a deeper understanding of barriers faced by asylum seekers across different levels of analysis. asylum seekers provided us with rich understandings of their individual and specific community levels of experience, for example through anecdotal descriptions of the types of misinformation that percolates within their online networks. On the other hand, professionals were instrumental at identifying more structural and contextual factors at the broader cross-community and policy level. For example, professionals spoke to us about the distinctions in immigrant resources across different states, which is information that most asylum seekers would not be aware of.

Speaking to multiple stakeholders can also help unearth important points of discrepancies. For instance, some professionals felt that many asylum seekers and other groups of immigrants would not use online resources due to a lack of digital literacy. However, as mentioned above, the asylum applicants we interviewed used a range of online technologies. Thus speaking to multiple stakeholders allowed for a rich understanding of informational barriers that would have been obfuscated by speaking to only one group of stakeholders.

The complementary knowledge gained from different sources speaks to the utility of the application of social-ecological perspective to immigrant communities espoused by Tachtler et al. [43], as a conceptual lens for understanding factors operating across different socio-ecological levels. Within a socio-ecological framework of resilience, Tachtler et al. have emphasized that support needs to happen in a multidimensional manner, with consideration given to different factors within a person's social ecology, including the individual, school, family, community, and societal levels. By examining multi-stakeholder perspectives, our research findings contribute to understanding the problem of asylum applicants' informational needs in a more comprehensive, multi-level way.

Future research should continue to probe points of difference among immigration stakeholders. Future research should also more specifically examine how the general themes discussed in this paper may vary between different online sources and types of information.

Our research findings inform how to best disseminate online healthcare and legal information, which can be particularly complicated, and a lack of accurate information in these areas can have grave consequences on asylum seekers' lives and well-being. Additionally, we contribute an understanding of the experiences of asylum seekers and professionals within the United States, whereas much of the previous literature has examined immigrants outside of the United States. The United States has a particularly complicated and inaccessible health care system. Therefore, designing for those navigating the intersections of both health and immigration systems can be especially challenging.

Design Recommendations

Designing systems to help asylum seekers access information is of great importance within the HCI community [1, 2, 5, 7, 11]. Building upon previous work in this space [19, 21, 24, 27, 33], we contributed a multi-perspective understanding of this problem by examining perspectives of multiple stakeholders, including asylum seekers and professional stakeholders (legal and healthcare professionals) who work with them.

Our results suggest that when designing for this population there are key considerations related to informational accuracy, accessibility, emotional barriers and context sensitivity. In this section we draw from prior work on designing for vulnerable populations including research on trauma informed design [15, 23, 31], homeless individuals [54], and people with chronic illnesses [40] to outline both general considerations and specific design implementations for designing informational tools for asylum seekers.

Conveying Informational Accuracy. While there is a substantial amount of information available to asylum seekers and other immigrants online, we found that the accuracy and trustworthiness of the source of this information is not always clear to asylum seekers. To combat this problem, we recommend that tools are transparent about where the information they are sharing comes from, such as by linking back to other resources. Incorporating accuracy cues such as displays stating when information was last updated can also help immigrants navigate an uncertain and constantly changing online informational landscape.

Increasing Accessibility. Inaccessibility of online information, arising from low literacy and language barriers, was identified by both legal and healthcare professionals as a major challenge for utilizing online resources by immigrants, which is in line with previous research findings [1, 3, 24, 32]. The first design recommendation to help navigate language related accessibility challenges is to design with parsimony in mind. Simple, clear language, and easy to recognize icons can help overcome language barriers. For example, using easy to recognize images instead of large blocks of text may help address literacy challenges. Similarly, ensuring that the language and terms used are consistent across the entirety of the tool is vital to ensuring continued accessibility of the information.

Another key facet of access is lack of access to the internet and digital tools due to connectivity and affordability [30, 50]. Previous research has identified low levels of digital literacy among immigrants as a barrier to immigrants' use of technology to gain information efficiently [3, 24]. However, we found in our interviews with asylum seekers that many of them were active online and utilized technologies for a variety of their needs including to access information around public benefits. This reinforces the importance of not assuming a lack of digital skills for all immigrants. The majority of our asylum seeker participants used mobile devices to connect to the internet at least some of the time, which is in line with previous literature [7, 33, 50] that has found mobile

devices as a key mode of internet access amongst immigrant groups. To that end, another specific design recommendation is to ensure that digital tools are mobile compatible in order to increase their accessibility.

Due to the complexity of immigration issues that were mentioned by providers, the final design recommendation for designers of digital tools to deal with accessibility challenges is to consider the ways that a tool can also support providers and advocates working in this space. Many of the professionals with whom we spoke with expressed interest in tools that could be used by asylum seekers and other immigrants in conjunction with their healthcare professionals, and even in tools geared solely towards educating providers on immigration issues. For example, a tool could incorporate a print feature that allows asylum seekers and other immigrants to print and share or email informational pages with their doctor, or vice versa.

Addressing Privacy Related Fears. We identified fear and stigma amongst asylum applicants as key emotional barriers to online information sources. Previous research has found that immigrants are especially susceptible to surveillance and privacy risks through the use of social media and other communication technologies [17, 27, 52]. In the same vein, professionals in our study viewed asylum seekers and other immigrants' privacy and data collection fears as justified in the face of a hostile immigration system.

Prior work on designing technologies for marginalized communities [23, 53] finds that digital interventions can inadvertently create risks for vulnerable people, especially due to increased visibility and detectability. Woelfer and Hendry [54] through their work with homeless individuals, advocate for developing a precautionary stance when creating digital interventions, through engagement with thorough analysis of an intervention's harms and benefits to avoid adverse consequences. In line with this stance, we recommend that digital tools gather the minimal amount of personal information needed to provide information in order to avoid any potential harm.

Although certain types of information such as location are often collected by default to help personalize digital tools, it should be collected only when necessary, e.g., to increase contextual sensitivity of information, and at the appropriate scope (e.g., only asking for the state, but not city of residence if information only varies by state). Furthermore, clear disclaimers on digital tools stating, "who you are and what you will do" with the information collected and what one will NOT do with this information (such as sell the data, share with the Department of Homeland Security etc.) can help mitigate asylum applicants and other immigrants' fears and concerns.

In addition to reducing data collection parameters potential data privacy concerns, professionals recommended providing a level of plausible deniability for users when designing digital tools. For example, instead of having someone click an option saying "*I'm undocumented*", one could have it framed more generally, such as "*I'm interested in undocumented people's rights*". Reframing information in this manner allows immigrants to search through information without fear of being directly tied back to their searches.

Contextually Sensitive Design. asylum seekers' informational challenges and the solutions available to these challenges were described to be very dependent on the specific geographic and social contexts within which they are embedded. There are two design recommendations that emerged from our findings around context sensitivity. First, digital tools should be appropriately scoped. Initial plans for a tool may be overly ambitious in scope, for example attempting to speak to immigration issues across the United States. However, due to the contextual nature of immigrant information, designing a tool that can engage deeply with a few issues rather than being broadly applied can be more successful. Context-sensitive design has been identified as a key approach to effective technological interventions for vulnerable groups [38, 49] but is especially important

within the public benefits for asylum seekers' space due to the complexity and variability of these issues.

Thus, our next design recommendation to help navigate contextual barriers is to work with community partners in creating digital tools for tackling information challenges for asylum seekers.Working with established community groups may help gain immigrant communities' trust and dispel fears around utilization of the tool. Additionally, such groups are often already well versed in local nuances and narratives and have already established ties that they can help connect designers with asylum seekers and other immigrants. Groups created by asylum seekers may be especially helpful with targeting strategies to tackle specific localized challenges.

Limitations

Our research had several limitations. The asylum seekers that we interviewed immigrated from a broad range of countries and were all residing in a large urban city. We recognize that public benefits may differ by jurisdiction. Additionally, all asylum seekers in this study had some knowledge of and access to the WCCHR clinic where we recruited from. Therefore, they may have access to more healthcare than other immigrants.

Our research findings focus specifically on healthcare and legal needs rather than more general information seeking needs. Therefore, our findings may not extend to other types of asylum seekers' informational needs.

Finally, due to COVID-19, remote interviews were conducted with legal and healthcare professionals. These professionals may have more technical expertise than other professionals that may have not participated this research due to lack of access to technology or lack of training to use technologies such as Zoom. Given the severity of COVID-19, recruitment of healthcare and legal professionals was difficult due to limited time and access. However, we feel we reached data saturation and that our recruitment was sufficient.

6 CONCLUSION

This paper describes a multi-stakeholder qualitative study that identifies and analyzes the barriers and needs faced by asylum applicants when using digital informational resources to obtain information about public benefits. Although there are many digital resources available to asylum applicants and other immigrants, by synthesizing asylum seekers and professional stakeholders' perspectives, our study revealed four major challenges in effectively using them: informational uncertainty, accessibility, emotional barriers and contextual sensitivity issues. Additionally, interviews with legal and healthcare professionals showed a need to develop tools for multiple stakeholders that provide care and support to asylum seekers. Taken together, our findings make evident the need to include multi-stakeholder perspectives in understanding asylum seekers' informational healthcare and legal needs and the design of informational digital technologies to address those needs.

7 ACKNOWLEDGEMENT

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