"We happen to be different and different is not bad": Designing for Intersectional Fat-Positive Information-Seeking

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ABSTRACT

Fat liberation is a social movement advocating for equal treatment of fat people, who are currently subjected to harmful stereotypes, harassment, discrimination at school and work, and medical mistreatment, and is an understudied movement in HCI research. Due to the social and legal acceptability of anti-fatness, many physical spaces, such as businesses and healthcare providers, are unsafe or inaccessible for fat people. We conducted three in-person and virtual participatory design workshops with fat liberationist organizers and community members (N = 15) to imagine fat positive technologies. Participants designed a system to help them find size-inclusive resources, services, and healthcare providers in the offline world with design features centered around intersectionality, and participants' desire for technologies that recognized their diverse identities and characteristics. We present features and values for a fat-positive information-seeking system and synthesize present and historical HCI theories into a design framework for intersectional fat-positive HCI.

CCS CONCEPTS

• **Human-centered computing → Human computer interaction (HCI)**; User studies.

KEYWORDS

Fat liberation, anti-fatness, participatory design, intersectionality, social movements, social justice

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1 INTRODUCTION

Fat liberation is a social movement advocating for fat people to have equity with straight-sized (non-fat) people in navigating the world freely, without stigma, social exclusion, emotional and physical abuse, harassment, medical mistreatment, or financial penalty [6, 15, 30, 37, 40, 59, 75, 105]. Anti-fatness is pervasive and largely socially-acceptable, making many spaces in the offline world hostile or inaccessible to fat people [6, 30, 75, 77, 83, 87]. There are few legal protections regarding discrimination on the basis of size [82]. For example, in the US, only two states and seven cities have passed legislation banning weight discrimination [77, 83, 98].

In the absence of adequate measures to ensure safe and accessible spaces for them, the fat liberation community and other marginalized communities have used online spaces to share information about navigating the offline world [4, 13, 23, 54, 55, 85]. Indeed, the fat liberationist organizers and community members we worked with for this study emphasized the need for a digital system for information-seeking tailored specifically to their needs. Considering the unique qualities of the fat community, as compared to other marginalized groups, such as the social and legal acceptability of anti-fatness and the harm this creates in medical settings, we heard from members of this community that such a system would afford life-sustaining benefits. While formalized and centralized digital systems for this purpose are currently in development [4], prior academic research has not yet investigated fat liberationists' needs and desires from such a system. Such research can help scaffold emerging conversations in HCI literature about the need for fat inclusivity and how to actualize it. We conducted participatory design workshops with fat liberationist organizers and community members to identify pain points in their current processes for identifying fat-friendly resources, services, businesses, and healthcare providers. These design workshops centered around the following research questions:

RQ1: How do current digital technologies support or hinder fat people in safely and comfortably navigating the world?

RQ2: How can future digital technologies be designed, redesigned, and reimagined to support fat people in safely and comfortably navigating the world?

Through workshop activities, participants described the challenges they faced using existing technologies to identify fat-friendly resources. Information is often disorganized and lacking key details, causing participants to spend significant time and energy identifying a suitable option. Participants designed a platform for information-seeking and sharing covering a broad range of topics, from healthcare to book recommendations, with features that would resolve their existing challenges finding fat-friendly businesses, services, healthcare providers, and products. They carefully considered the practical logistics, user experience, and embedded values of such a platform. Our participants described their needs for

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a centralized resource rooted in intersectionality, that would accommodate not only their needs as fat people, but also their needs based on other intersecting identities such as LGBTQ+, disabled, neurodivergent, etc. Intersectionality describes how considerations of marginalization and social bias must account for the intersections of different identities that people hold and argues that attempts to isolate one facet of someone's identity to understand their experiences are inadequate [14, 19]. Intersectionality has been thoughtfully considered with regards to fat experience by fat studies scholars [31, 49, 71, 76, 106] and relating to technology design by HCI researchers [10, 17, 26, 27, 29, 57, 79, 80, 86, 108]. We contribute to the ongoing discussion of intersectionality in fat liberation and HCI by adapting and synthesizing design theory from past and present HCI research to meet our participants' needs and goals. We integrate Gregor et al.'s concept of Design for Dynamic Diversity (DDD) [41], originally focused on older adults' diverse and dynamic physical and cognitive accessibility needs, and Wong-Villacres et al.'s extension of Intersectional HCI [108] to attend to fat people's diverse and dynamic identities and enable related accommodations from online information- and resource-seeking systems. In doing so, we present practical implications for design rooted in the needs of fat liberationists.

In this work, we offer two key contributions. First, we identify shortcomings in existing systems for finding safe and accessible resources, services, businesses, and healthcare providers in their area and provide design features and values for a system that would better support fat people in this regard. We anticipate that these design recommendations will be useful to practitioners in designing tools for the fat-positive community. Secondly, we provide a theoretical contribution in our integration of insights from Gregor et al.'s Design for Dynamic Diversity [41] and Wong-Villacres et al.'s Designing for Intersections [108] in the context of fat liberation. Here, we articulate a lens for recognizing and attending to the dynamism inherent to fat people's intersectional identities and for preserving their agency to prioritize the facets of their identity most critical or relevant to a given task.

2 BACKGROUND

2.1 The Modern Fat Liberation Movement and Fat Positive HCI

The fat liberation movement is a social movement organized around opposition to anti-fatness. The contemporary fat liberation movement engages in a variety of efforts to raise awareness about and challenge the systemic pathologization of fat bodies. Importantly, fat liberationists have reclaimed "fat" as a neutral descriptor rather than a hateful epithet [105]. Antifatness stems from and closely intersects with other forms of oppression including racism, classism, misogyny, colonialism, ableism, and transphobia, among others [31, 38, 47, 97]. The medicalization of fatness in the 20th century, particularly during the 1990s amid rising concerns about the "obesity epidemic," served to validate and heighten anti-fat prejudice and discrimination by associating fatness with disease and disorder [31, 68, 97, 105]. These developments followed from a turn towards healthism, wherein maintaining "good" health came to be a marker of morality. As fatness was seen as synonymous with "poor" health and the result of lifestyle choices and weak will [22], it came to represent a moral failing [36]. The pathologization of fatness has resulted in various systemic harms. Fat people face prejudicial treatment across contexts in their everyday lives [40, 58, 76, 97, 99]. Negative attitudes towards and stereotypes about fat people among health care providers lead to diminished quality of care and thus poorer health outcomes [5, 22, 75, 100]. Fat people also experience accessibility issues, with an absence of seating and equipment that can accommodate larger bodies in airplanes, medical facilities, theaters, and restaurants, among other everyday spaces [40]. Further, the vast majority of retailers do not carry plus size clothing options [34, 40].

The fat liberation movement has given rise to the academic field of fat studies, which has produced much of the research on this movement. Prior work in fat studies has examined the "fatosphere," an online network that offers a safe space for fat people to find acceptance and a sense of belonging and an important tool for political action [23, 24, 72]. Recent work in HCI has also looked at the ways that perspectives on fatness intersect with technology. One recent study presented guidelines for ethical research conduct with fat participants [73] which has been used to inform the methodology of this work. Recent work in HCI has acknowledged relationships between anti-fatness and the object of study in the context of vaccine hesitancy [56], online eating disorder communities and people with histories of eating disorders [32, 85], and people who have experienced weight-related journeys [53], with some of this work taking an explicitly fat-positive stance. In looking at disability representation in virtual avatars, Mack et al. interviewed fat participants who described how current systems fail to represent the diversity of fat bodies and perpetuate anti-fat stigma through representations (or lack thereof) of fat bodies [62]. Another subset of prior work in HCI has explored healthism in HCI and normative assumptions of bodies, health, and fitness implicit in technology design [92–94]. In considering implicit anti-fatness in the design of fitness trackers Spiel presented "body-positive computing" as a design framework that divorces fitness technology from normative assumptions of fitness [92].

Importantly, although the fat liberation movement has grown in recent years, it remains a movement on the rise. The movement and its efforts are not as well known in mainstream political discourse as other social movements, which have key issues many members of the public could cite. While many people may be familiar with the more mainstream "body positivity" movement, this movement does not generally center fat rights and does not always embrace *fat* positivity [15, 20]. Recent work in HCI has engaged with fat liberation and fat positivity through the development of frameworks and guidelines for the HCI community [73, 92]. This work contributes to the emergent exploration of fat positive HCI by applying these frameworks to an empirical design study conducted through an explicitly fat liberationist lens.

2.2 Online Information Seeking Among Marginalized Communities

As information seeking for navigating the offline world safely and comfortably was a prominent theme in our design workshops with fat liberationists, we draw from these works in our analysis of how fat people currently engage in information seeking online and what

features and values would be included in an ideal system for information seeking and sharing. Prior work in HCI has examined the ways that marginalized communities utilize digital spaces to share information and resources [13, 42, 48, 54, 55, 85]. Research has also demonstrated a decline in reliance on social media for obtaining health-related information, attributed to growing skepticism about the quality of information available [110]. Scholars have delved into the impact of education and literacy on information-seeking behaviors on social media, highlighting concerns related to information overload [89]. The quest for information on social media often stems from its perceived ability to disseminate information widely [96]. However, issues such as noise and misinformation have led researchers to develop user-centric, specific, and localized tools tailored to the information needs of particular communities [50].

Specific to our participants' experiences of exclusion on the basis of size, research has also centered on fat people, along with the potential for digital spaces to offer social inclusion, community, and resource sharing [23]. For instance, AllGo is an app currently in development that compiles reviews about how size-accommodating local businesses are [4, 87]. While prior work in HCI has not examined the specific needs and challenges of fat activists' in seeking information online, much work has been done on other marginalized communities' online information seeking [13, 42, 54, 55, 85].

Black Twitter has been portrayed as a modern day Green Book, offering Black people a space to share resources and community [54, 55]. This space, like the Green Book, is an "open secret" - accessible in some ways to outsiders but carrying a deeper connotation exclusive only to members of the community [54]. The Black community utilizes Black Twitter, among other things, for information and resources regarding safety and access in physical and digital spaces, advertising Black businesses, engaging in activism, and supporting one another. In their analysis of the Green Book in comparison to Black Twitter, Klassen et al. highlight how the Green Book held similar qualities to digital spaces, despite it being a more static resource, in its allowance for user feedback and reviews of content [55].

Transgender communities often use digital technologies to share resources for navigating the offline world, whether informally through individually-compiled spreadsheets [13] and reviews of medical providers shared through social media hashtags [48], or through more formalized technological products such as an app that helps users locate transgender-friendly gender neutral bathrooms [85]. Digital technologies' potential to aid physical safety through information sharing has been a prominent theme in recent works in HCI with trans communities [42, 85]. Trans participants have described how they envision utilizing online spaces to advise others about safe and unsafe places and people in the offline world [85]. Haimson et al. conducted a participatory design study that considered how technology might aid trans people in navigating the world and accessing healthcare and other resources [42]. One outcome of this study was a design for a "Trans Yelp" to gather and distribute relevant information for their community about resources and healthcare providers in the offline world. Designers have also developed technologies to mitigate safety concerns for transgender people by allowing them to get help from their communities when they experience harm[95].

2.3 Design for Marginalized Populations

This study draws from and contributes to scholarship on design frameworks that center marginalized experiences, including Participatory Design, Universal Design, Intersectional HCI, and Design for Dynamic Diversity.

Participatory design seeks to democratize design by involving stakeholders beyond users and designers of dominant or majority groups in the creation of a system [7, 67]. Drawing from feminist theory, designing with participants, especially when focused on identity and marginalization, can more accurately represent the needs of participants while critically acknowledging their unique requirements. [8, 9, 44, 45]. Social movement researchers have also utilized modes of participatory research with grassroots organizations to present bottom-up innovations [103, 104]. Design workshops have proven to be effective in giving marginalized communities a platform to articulate features and functionality that meet their needs [33, 43–45]. Researchers have utilized participatory design approaches to collaboratively address the concerns of various marginalized groups, focusing particularly on generating solutions for social issues they encounter [42, 44, 46, 107]. This method is used to reduce power imbalances, bringing users and community members closer to researchers and developers, and empowering them to have control over designing systems that will impact them [17, 109]. Moreover, imagining design solutions together that accurately represent the needs of the community not only empowers the community but also encourages collective action, equipping users to work with necessary stakeholders and build their own tools [17, 60].

Beyond participatory design, frameworks centered around the needs of marginalized users often strive to "design for all," such that users with different needs are able to use systems with little to no extraneous labor [70]. Universal design and inclusive design are similar approaches rooted in disability justice aimed at making daily life activities easier [11, 52] by designing for accessibility and usability for all [2]. Notably, in the context of fat liberation, universal design includes guidelines for design that includes accommodations for people of different body sizes [1]. Inclusive/universal design typically refers to physical disability and accessibility, but can also be applied to other facets of user identity. Inclusive/universal design has been applied in the context of digital health equity for Latino populations [3], accessibility in higher education on the basis of gender identity and sexual orientation [18], and inclusive game design for Black women [78]. The idea of developing a set of universal/inclusive design guidelines has faced criticism, suggesting that aiming for a singular universal design paradigm may be impossible to achieve, due to the diversity of users' needs and abilities [69, 74]. Design that satisfies one user's needs may be difficult or impossible to use by someone with a different set of needs and abilities. However, this does not mean designers should avoid striving for inclusivity in their designs. Failure to practice inclusive design can result in a phenomenon Sin et al. describe as Digital Design Marginalization, by which excluded groups are barred from accessing important systems and services due to insufficient design [88].

Research informed by intersectionality theory has helped illuminate the challenges of universal design by drawing attention to the

complexity of identities in design work. This research includes approaches grounded in Black Feminist Thought [27], intersectional computing [57], Intersectional HCI [86], intersectionality in processes and interactions [108], intersectionality in game design [10], and anti-oppressive design [91]. Intersectional HCI is an approach for HCI research that embeds recognition of intersectionality into the research process, accounting for both the intersectional identities of authors and participants [86]. In their work on designing for intersections, Wong-Villarces et al. extend Intersectional HCI to afford users more agency through a focus on users' interactions with processes and systems of power, rather than just the intersecting identity characteristics they hold [108]. Intersectional computing highlights invisibilized intersections and marginalized facets of identity that are typically under-recognized, and advocates for bridging of intersections to identify overlaps and similarities that can create pathways to shared knowledge [57]. Erete et al.'s consideration of intersectionality in HCI research and design methods is grounded in Black Feminist Thought and centers around the recognition of historical impact and power dynamics present in research engagements, research sites, and topics of study to facilitate HCI design research as a tool for resistance, rather than oppression [27]. Anti-oppressive design is rooted in a framework that acknowledges socially "good" outcomes of research and design as those which dismantle structures of oppression [91]. One commonality of these approaches that we draw from in our work is their recognition of the complexity of intersectionality, in opposition to "check-box" intersectionality, which is little more than an attempt to categorize identities [79]. While intersectional HCI work has made important contributions for more equitable and nuanced design research methodologies, with an interest in more inclusive technology designs, it has not focused as much on specific design recommendations.

One design framework addressing the complex needs of diverse users is Gregor et al.'s Design for Dynamic Diversity (DDD) [41]. Originally presented in the context of older adults' use of digital interfaces, DDD pushes back against traditional design practices that design for a "typical" or "ideal" user by encouraging designers to consider the dynamism and diversity of user needs and experiences. The dynamism central to this approach may be appropriate in reckoning with critiques of the feasibility of a single set of universal design guidelines. Instead, Design for Dynamic Diversity advocates for systems to be flexible to account for diversity among and within users, and the shifting and changing nature of their needs and abilities. Drawing from Gregor et al.'s work, researchers have attempted to design highly dynamic interfaces that are adaptable to different users based on their specific needs [39, 65]. It has not yet been considered, however, how an approach such as DDD might be applied to the diverse and dynamic nature of users' *identities* and related needs, in addition to their abilities.

Our study was informed by the foregoing frameworks for design that center marginalized populations. We designed a participatory design study to explore the benefits and shortcomings of existing digital technologies, as well as the potential of future technologies, for supporting fat people in safely and comfortably navigating the world. Our participants' reflections highlighted the dynamism of their intersectional identities and corresponding needs across time and contexts, which pointed to the need for an integrative framework that brings together participatory design, intersectional perspectives, and designing for dynamic diversity. We discuss this in relation to our findings in section 6.

3 METHODS

3.1 Study Design

We took a participatory approach in this study, both in designing and conducting the workshops. We partnered with a local fat liberationist organization and collaboratively designed the study to meet the needs and interests of the organization's community members. Throughout the rest of this work, we will refer to this organization as Fat Liberation Organization (FLO). We did this by meeting virtually with the organization's leadership, who we will refer to throughout the paper as Quinn, in the initial planning stages to describe our general plans (running a design workshop and what that typically entails per our field's conventions). Note that all participants have been given pseudonyms and any identifying details about the organization have been anonymized. Quinn provided suggestions for implementing a design workshop with her community. For example, when we described different potential design activities, she advised based on her experience with the community that more structured design activities may bring out more creative inspiration in participants than unstructured activities. Quinn acted as both a workshop organizer and participant, advising on study design and participating in part of the in-person design workshop. In partnering with FLO, we aimed to provide a tangible benefit to the community, beyond standard study participation incentives. Quinn described FLO's need for a technical solution to catalogue fat-friendly healthcare providers and businesses in their local area. She described her current practice of maintaining this list of recommended businesses and healthcare providers via comments on an Instagram post for a wider audience, and via a Discord channel for a more exclusive subset of their community. She explained these lists are not very accessible to search through and require a lot of manual oversight on her part to update and maintain. She suggested that these workshops might help produce ideas and designs for a more usable, easy to maintain database system for business and healthcare recommendations and referrals. Therefore, some of the workshop design activities were focused on designing this type of digital system.

3.1.1 Procedure. We conducted one in-person workshop with members of FLO and two virtual workshops with members of fat liberationist community organizations throughout the United States. While originally focused on FLO members, Quinn requested to share our study with her network of fat activists, which resulted in a broader sample.

The in-person workshop was held in a public library in the mid-sized city where FLO is located and the virtual workshops were conducted via Zoom, using Miro for the design activities. Miro (www.miro.com) has been used extensively as a virtual collaborative platform since it provides efficient functionalities for virtual collaboration [12, 51, 90, 101, 102]. The in-person workshop was audio recorded and all design artifacts were photographed. The virtual workshops were video recorded.

Pseudonym	Age	Gender	Race	Education	Income	Sexual Orientation	Body Size	Workshop
Riley	31	Woman	White	Master's degree	$50,000 up to $59,999	Queer	Large fat	1 (in person)
Jordan	46	Woman	Black	College diploma	$70,000 up to $79,999	Heterosexual	Large fat	1 (in person)
Morgan	25	Woman	White	College diploma	$60,000 up to $69,999	Pansexual	Mid fat	1 (in person)
Quinn	N/A	Woman	White	N/A	N/A	N/A	N/A	1 (in person)
Cameron	N/A	N/A	Black	N/A	N/A	N/A	N/A	1 (in person)
Alex	31	Woman	White	College diploma	$60,000 up to $69,999	Heterosexual	Mid fat	2 (virtual)
Jamie	32	Woman	White	Master's degree	$100,000 up to $149,999	Heterosexual	Mid fat	2 (virtual)
Casey	25	Woman	White	Master's degree	$20,000 up to $29,999	Heterosexual	Straight Sized	2 (virtual)
Taylor	22	Non-binary	White	Some college	Up to $10,000	Queer	Small fat	2 (virtual)
Parker	41	Woman	White	Some college	N/A	Asexual	Large fat	3 (virtual)
Reese	N/A	Man	White	N/A	N/A	N/A	N/A	3 (virtual)
Blair	25	Woman/non-binary	White	College diploma	$60,000 up to $69,999	Lesbian	Large fat	3 (virtual)
Sage	37	Woman	White	High school diploma or GED	$20,000 up to $29,999	Bisexual	Super fat/Infinifat	3 (virtual)
Skylar	51	Woman	White	College diploma	$10,000 up to $19,999	Lesbian	Large fat	3 (virtual)
Avery	39	Intersex	White	Master's degree	$70,000 up to $80,000	Queer	N/A	3 (virtual)

Table 1: Participant demographics

All participants were compensated at a rate of $20 per hour, resulting in $60 for workshop participants and additional compensation for the leader of the community group who spent time outside of the workshops consulting on the study design. The study was approved by the authors' university's institutional review board.

Each workshop lasted three-hours, punctuated by three 10-minute breaks. These sessions encompassed five key parts: an initial introductory exercise, three distinct design activities, and a concluding collective deliberation session, where participants reflected on the work done throughout the design workshop. During each part of the workshop, participants talked and explained their rationale behind the designs. The overall workshop structure was inspired by Vaccaro et al.'s participatory design study on contestability for content moderation [102] in which they had a sensitizing activity followed by a series of design activities that were increasingly open-ended. We drew upon this study's design in part because of its dual-in-person/virtual design. We knew we wanted to run both in-person and virtual workshops to reach a larger sample of participants and to make the study accessible to those who may be unable to participate in person. Therefore, we needed to design the workshop in a way that would be translatable between in-person and virtual settings. We began each workshop with an introductory slide show from the research team, moving through a series of design activities (beginning with the most structured and ending with the least structured) and ending with a concluding discussion.

Drawing from Donovan [25], the introductory sensitizing group activity consisted of brainstorming and listing out recent positive experiences with social media and other technologies (related to fat liberation/fat experience online) on sticky notes in the in-person workshop. For the virtual workshops, participants added virtual sticky notes to the Miro whiteboard. This activity was intended to provide a positive start to the workshop and prime participants to think about the workshop focus - their experiences as fat people with digital technologies. For the virtual workshop, this also helped participants get familiarized with the Miro board and its functionalities.

We then moved on to our first design activity, which was also our most structured activity. Drawing from Vaccaro et al. we used a report card activity [102] where participants were asked to grade

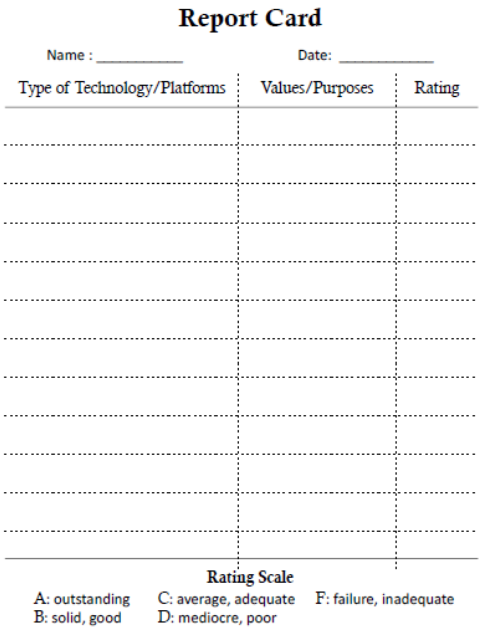

Figure 1: Report Card Activity Template

existing technologies including online platforms, social media and other systems on different values related to fat liberation. Figure 1 shows the template for the in-person report card activity, where participants filled in technologies, chose values, and provided ratings. We provided a similar template on the Miro board for the virtual workshops. We also provided a list of example values for participants to draw inspiration from.

Before the next activities, participants were given an option of continuing on different tracks. They could conduct the next design activities either re-imagining digital technologies more broadly to center fat liberation OR focusing specifically on designing a

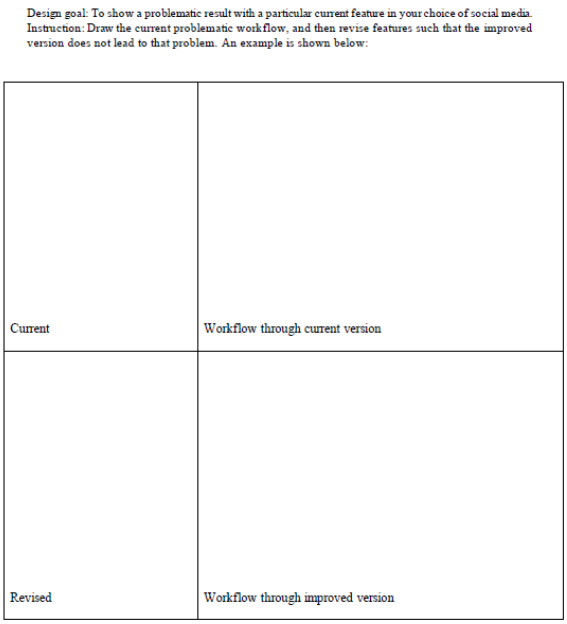

Figure 2: Wishing Activity Template

tool to track and refer to fat friendly resources, such as healthcare providers, restaurants and other products or services. Participants were divided into groups based on their choice, and the consequent design activities were conducted in these corresponding smaller groups. Across the three workshops and 15 total participants, 13 participants elected to work on the referral tool, while one group of two participants chose to consider technologies more broadly. Each group had at least one of the authors as a facilitator and worked at separate tables or Zoom breakout rooms.

The second activity was semi-structured and built on participants' reflections from the report card activity. We drew from user research and marketing activities [64], asking our participants to depict their current process for finding a fat-friendly service (or, for the group that chose to focus on technology more broadly, any process they go through using technology) and then draw what their ideal process would be (see figure 2).

The final design activity followed an open and unstructured approach. We drew from Vaccaro et al's., [102] open ended activity and asked participants to design their ideal tool, system or platform that would support fat liberation, building upon the other two activities. Participants were asked to either imagine and design a technology (platform, tool, system, physical device, etc.) that would aid them in finding fat-friendly services or design a technology to support fat liberation more broadly. Once all the design activities are completed, the entire group came together to discuss their experiences and talk about their designs.

After each workshop, we sent a follow-up email to participants with a questionnaire to collect demographic details which we report in Table 1. We used an open text field for participants to self-describe their gender. For body size identification we used categories informed by Linda Gerhardt's "Fategories" and provided a link to an informational post so participants could self-describe based on a unified definition [35]. Participants were not required to answer any of the demographic questions and we have marked questions that participants declined to answer with "N/A" in Table 1. Throughout this work, we default to the term "fat" but use alternate terms when participants indicated that they would prefer them (e.g., "person of size"), as has been recommended in prior work regarding HCI research with fat participants [73].

3.2 Data Analysis

Immediately following each workshop, all members of the research team met to debrief regarding overall impressions and reflections about the workshop. Within a week of each workshop, the team met again to have another discussion about key takeaways and impressions of the workshop after having had some time to reflect on the workshop and review produced design artifacts. We took an iterative approach with the workshops, making small changes to activity templates and time allocations based on participant feedback from prior workshops. We also began to identify key themes emerging in earlier workshops and paid special attention to those themes in following workshops.

We used qualitative analysis software to conduct first cycle open coding (or initial coding) [84] of workshop transcripts and design artifacts. Each member of the research team focused on coding one of the three workshops, but codes across all workshops were reviewed by all members of the research team to ensure we reached consensus on the meaning of the data. As many of the design artifacts included significant text, much of the design artifact coding was similar to transcript coding. However, we also coded design artifacts based on visual features, such as pictures that participants drew, diagrams, etc. We met after this first round of coding to discuss salient codes, potential code groups, and emergent themes for second cycle focused coding. We then conducted second cycle focused coding, resulting in overarching themes of flaws with existing processes (RQ1) and features and values of a speculative tool for fat liberation (RQ2). Each of these broad topics has subthemes based on prominent and frequent codes from the transcripts and design artifacts.

3.3 Positionality Statement

While we aim to center our participants' voices and experiences in this work, it is inevitable that our identities inform the way we conduct and interpret our work. All of the authors are straight-sized women. Therefore, we do not claim to understand or have firsthand expertise to relate to our participants' experiences as fat people, and we defer to them as experts on this topic [16, 21, 46]. In alignment from calls in HCI [17] and fat studies [63], we have adopted a research approach guided by the social justice principle, "nothing about us without us" by involving our participants in every step of the study and deferring to their judgment on key decisions. Through this approach, we have aimed to practice responsible allyship by taking on responsibility of advocating for this group and conducting work that elevates their voices, in an attempt to reduce the burden on the community to be solely responsible for advocating for their cause. Concrete steps we have taken for responsible allyship are guided by prior work in fat studies and HCI [17, 46, 63, 73] such as involving participants and fat activists

in the earliest stages of study design, compensating participants in accordance with their status as experts, creating a safe space for participants in design workshops by setting ground rules, and member-checking results. This work is informed by a view that outside researchers can conduct design workshops to establish a point of contact between researchers and members of the community to understand, share, and challenge existing technologies and systems, as well as conceptualize new solutions [61, 81]. By grounding this research in a critical understanding of power dynamics and historical context with relation to the community of study, we have tried to offset ethical risks of conducting outsider research with members of the fat liberation community [17, 46, 73]. In our discussions of intersectionality, while we do not claim to understand the intersectional experiences of fat people, we draw from experiences across other intersecting qualities and identities that we hold.

4 FINDINGS

Through the design activities, participants identified how existing technological systems were insufficient for finding fat-positive resources, causing them to settle for imperfect options. In this section, we note the challenges they encountered with existing technological systems, particularly related to obtaining information about fat-friendly products, services, resources, and healthcare providers, to address RQ1: How do current digital technologies support or hinder fat people in safely and comfortably navigating the world?

Participants shared how information about fat-friendly resources is often disorganized, outdated, lacking crucial details, and hard to find and navigate. Insufficient specific information made it difficult for participants to judge if a service or product will meet their needs. For example, the term "fat positivity" can be interpreted in a variety of ways, meaning that even healthcare providers who align themselves with fat positivity may unintentionally enact anti-fatness in ways that inflict psychological and physical harm on participants. Further, participants' challenges were exacerbated when they sought services that would adequately accommodate their needs in the context of their intersectional identities, rather than along the single axis of fat positivity. Due to these challenges, finding fat-friendly resources online proved to be both time-consuming and emotionally taxing. In section 5, we detail the features and values of the design solution participants created to address the challenges we highlight here.

4.1 Information is lacking, informal, and disorganized

Participants expressed frustration with how existing technologies were insufficient for effective information retrieval. They highlighted the challenges posed by the multitude of platforms and sources. Jamie shared in this context,

> *[T]he main issue that I run into is just there's so many things that exist out there. And even within a regional community that's doing a lot of different things, it's like, "Okay. There's a Discord. There's a Slack. There's this Instagram group. There's a Facebook group. There's this. There's that. There's this website you could go to. There's that one." I feel like there's something about wanting something that is one place...* (Workshop 2)

FLO had a system for collecting and disseminating recommendations for local fat-friendly resources with their community. They compiled recommendations for local fat-friendly businesses on their Instagram account via comments. They also had a dedicated channel in their Discord server where they collected and shared recommendations. Participants noted benefits of Discord, such as being able to "get into more conversation" and "chat" (Cameron, Workshop 1) about recommendations.

However, participants also noted Discord's shortcomings. Access to the Discord server is restricted to ensure it remains a safe environment for those invested in fat liberation and involved with the local community. This exclusivity, while intentional and important, limits the reach and accessibility of these resources to a wider audience who could benefit from them, as Cameron (Workshop 1) noted: *"Not everybody's on Discord, so they're missing out on all this great information."* The restricted nature of Discord was described similarly, as both a benefit and barrier, by participants from other workshop sessions who were not a part of FLO, but had used Discord in similar contexts. Beyond the issue of access, participants also noted that Discord lacks the functionalities of a searchable database, making it difficult to find relevant recommendations, as Quinn (Workshop 1) noted, *"Discord has a search function. But it still isn't an index, a really user-friendly way to see all the different options."* Participants also emphasized the absence of a formal mechanism to verify the accuracy of specific information, underscoring instances where these technologies adversely affected them by disseminating inaccurate information. In the absence of formalized repositories of reliable information, participants has developed strategies to collect accurate information. For example, Jordan discussed building a personal collection of photos of the interiors of businesses,

> *Jordan: I also have pictures of inside of places, like seating and tables, because I know if I'm going somewhere with friends, I'll be like, "Where is it?" And then I'll frantically scan through the images.*
> *Morgan: There's those cafe chairs that are everywhere that have the two bars on the back. And if you see them, you can't go.* (Workshop 1)

Lacking a centralized database for fat-friendly services meant that participants had to cast a wide net, with optimism but without a guarantee of identifying anything relevant. They talked about Googling fat-friendly resources, searching within social media groups, and checking health insurance websites. They also consulted collected repositories of recommendations, often in the form of shared documents. While helpful, they explained that these were often outdated. For example, Morgan and Riley (Workshop 1) discussed this in relation to Google Doc lists of fat-friendly doctors organized by state, noting that because the lists had not been updated in years, *"We don't even know if the doctor still exists" (Riley)* or *"Maybe they changed practices. Maybe they aren't in [the same city] anymore" (Morgan).*

Even in more populous areas, fat-friendly healthcare providers are rare. In our design workshop with FLO, which is based out

of a mid-sized city, there was a running joke that nearly all the participants saw the same doctor,

> *Quinn: And then I found my doctor from a very old Health at Every Size message board, Dr. Anderson,* [1] *which, I feel like a lot of people now in [FLO] see Dr. Anderson. [...]*
> *Riley: I see the same doctor, that's why I'm laughing.*
> *Quinn: Yeah, I know, everyone does! I think half of [FLO] does now because Dr. Anderson is one of the best in that regard.* (Workshop 1)

The problem of identifying fat-friendly providers can be worse for people in smaller towns, where there are fewer options and less information online about available options. In the previous quote, Quinn references Health at Every Size (HAES), a prominent health and wellness approach that uncouples "good" health from weight [28]. In contrast to bigger cities, Parker explained that where she lives *"there is no doctor who has the Health at Every Size certification."* (Workshop 3).

Consequently, participants often described settling for something "tolerable," though lacking. This often came up in the context of healthcare information and facilities, as Riley (Workshop 1) described, *And if [my experience with the provider] sucks, I can either give up entirely, go back to square one, or just continue until it gets intolerable.*

The pervasiveness of medical anti-fatness meant that participants represented routine anti-fatness as a normal part of their experiences with health care providers, leading them to accept a less-than-ideal provider. Without robust, formalized information sources on fat-positive resources and medical providers, participants described how information instead often travelled through "whisper networks." While this kind of informal information sharing is important within marginalized communities, it is also exclusive and subjective in ways that might omit specific details and/or leave new community members in the dark.

4.2 Lack of specific details

In the context of healthcare, participants described how the lack of transparency around providers' stances on fat acceptance, due in part to a lack of uniformity of terminology around fat acceptance, creates risk and uncertainty. Therefore, participants found the use of vague, blanket terms to be unhelpful in selecting a service that would meet their needs. Instead, participants wanted to know specific details that could help them make an informed decision. In one design artifact, a participant depicted themselves "hoping for the best" while setting up a medical appointment, lacking reliable information that the healthcare provider would meet their standards of care. Another participant described having to select a provider based off of "vibes" when more concrete information was not available,

> *Riley: I'm looking for PCP (primary care provider) here in my zip code, go through those, pick one that maybe has a vibe or is close, I guess, and then Google them, look at what stuff I can find. If they still seem okay, call them, make an appointment.* (Workshop 1)

[1] Pseudonym

Participants reported that even when they encountered providers or businesses that used key terminology seemingly signalling fat-friendliness, it still took some effort to discern how they were using the terminology. For example, Quinn (Workshop 1) mentioned that some healthcare providers will reference HAES to signal that they are fat-friendly. However, building on this, Jordan (Workshop 1) pointed out how the lack of standardized definition created an ever-present possibility of misalignment in meaning, *"[providers] can still use innocuous language to sort of hide wellness culture and diet culture."*

Alex (Workshop 2) considered this challenge in the context of choosing books for fat-positive book clubs,

> *Sometimes people see a book in the bookstore that has a fat-looking person on the cover in the illustration, but you don't know if there's going to be a weight-loss journey. [...] You wouldn't find the ones that are good unless someone recommends it to you.*

Participants acknowledged in this conversation that part of the issue was due to the misappropriation of fat-positivity and adjacent terms as Casey and Taylor reference here with regards to "wellness culture" and "body positivity,"

> *Casey: I think what's really hard with the fat movement, too, is this threshold spectrum of what is considered weight-inclusive and fat-positive and what is the complete opposite where you do have the anti-fat bias. [...] [W]ellness culture, I think, is equally as damaging as diet culture in a lot of ways. And I think that it pretends to be fat-positive.*
> *Taylor: [...] I think that's a great point, especially because [...] body positivity does not equate to fat liberation, especially when it's centering thin bodies, especially thin white bodies. I think we should also, like you said, find - yeah - criteria or what qualifies as a fat-positive book.* (Workshop 2)

Taylor went on to note the need for multifaceted filters that could capture the uniqueness of different people's needs and experiences, based on the diversity present in fat experiences as well as considerations of intersectionality.

While a system with designated filters for fat-friendly providers could help participants weed out options that would be unacceptable to them, this would not be enough to determine who their best option would be. Participants described how detailed review and rating features could help to add another layer of reliable information to help them make an informed choice. Because of the diversity of their identities, experiences, and needs, they felt that common design features of existing recommendation systems, like star ratings, were unhelpful,

> *Morgan: I don't think I have much weight in the stars, do you?*
> *Riley: Yeah, I don't think it helps, not in a base rating. A 5-star provider may or may not work for you. What you need is actual information about what they're good at and what they're not.* (Workshop 1)

Quantitative rating metrics assume universal consensus among users of a reviewed service or product regarding what is low- or

high-quality. As participants have described however, they recognize that even among fat positive people, there still cannot be a universal and quantifiable definition of "good" or "bad" service. Instead, Morgan and Riley suggest that qualitative details are more useful for creating shared understanding about someone's experience with a given healthcare provider.

Here, participants critiqued design features geared towards a singular, "typical" user as insufficient for meeting their needs on the basis of their diverse characteristics and needs.

4.3 Failure to accommodate intersectional needs

Our participants were extremely conscious of intersectionality, often describing their experiences in the context of their identity as fat people alongside other marginalized facets of their identity. In this way, they described how existing technology design falls short in adequately accommodating the diversity of their needs on the basis of their intersectional identities. Additionally, they acknowledged the difficulty of identifying a universally applicable definition of fat positivity as individuals have differing needs and expectations based on a multiplicity of factors related to each person's lived experience,

> *Riley: I think one of the issues that you run into with any community-submitted listing like that is that one person's level of acceptable in their metric for what is going to be welcoming and warm and all that sort of thing is going to differ from the next person. I may be fine with a provider who talks a certain way and another person is like, "Nope, that's a hard boundary for me." My experience as a white person is going to be different than somebody who's not a white person. It's stuff like this that are things that I can not reasonably provide the information for.* (Workshop 1)

Here, Riley acknowledges that each person's experience is informed by the context of their specific needs, desires, and characteristics. For those with intersecting marginalized or stigmatized identities, therefore, it can be even more challenging to identify contextually relevant information about services. For example, Avery (Workshop 3) described the challenges they encountered when trying to meet the requests of providers who require them to lose weight, particularly as they had to find resources that would accommodate their needs as a trans, non-binary person of size,

> *[T]hey tell you to lose the weight, but then gym memberships aren't covered, there's not accessible gyms [...] I have found one place locally that has PT [physical therapy] in a pool that is a single person at a time that I've been able to go in as a [...] trans non-binary person to use and feel comfortable doing. And, unfortunately, I got a staph infection from it.*

Avery's experiences highlight the uphill battle people of size face when trying to find providers who will treat them with respect while offering appropriate facilities and resources for accommodating their needs across intersecting marginalized characteristics.

4.4 Time investment and emotional energy

Participants ascribed the extent of time and emotional energy invested in searches for resources and information to the lack of digital tools tailored to the fat liberation community. As a result, participants were especially impacted by having to spend extraneous time and energy for finding particular resources. Avery (Workshop 3) described the time commitment of finding a fat-friendly healthcare provider as a "full-time job." As another participant put it, her typical process for finding a fat-friendly service requires her to "google for ages" (Figure 3).

Since online resources also often contained inaccurate or inadequate information, people often had to repeat the process of trying to find a fat-friendly service or provider multiple times before landing on something acceptable, creating a greater time burden, as well as an emotional toll. Participants vividly described the discouraging feeling of being "back at step one" and the difficulty of motivating themselves to repeat a difficult and sometimes painful process time and again,

> *Morgan: I think the biggest issue [with the process of identifying a fat-friendly provider], and I'm sure with yours too, is it takes me so much to get myself to do this process.*
> *Riley: Yes. Because it sucks every step of the process. It feels like 90% of the time you just end in rejection or failure or something blindsides you with something that's going to suck. And so you're just like, "Why am I bothering with this when I could just ignore that pain? I could have just ignored this, that, and the other thing." And I've had experiences where the first three visits or whatever, I'm with a therapist or whatever, seem fine. It seems like it's going well. And then we'll hit a place where it's like, "Oh, wait a second. This is just not acceptable going forward." And then you've wasted that huge investment of time and energy.*
> *Morgan: And you're back to step one.*
> *Riley: Yeah. And you're just like, "Okay, well, I might as well just give up now, because I am not doing this again from the beginning."* (Workshop 1)

While participants consistently described the frustration of trying to find an acceptable provider, the consequences of giving up on this process and going to someone who did not understand their experience and needs are even more painful,

> *Avery: I don't want to get these pamphlets anymore. I don't want to be shamed for my body at 180 pounds, much less 300. [...] And I went above and beyond, but still, I still get the pamphlets, I still get the "Well, your diet needs to, you know, you need to do this, and you need to do this. And maybe you should try keto."* (Workshop 3)

Lacking adequate technological systems for finding fat positive healthcare providers, let alone those who could also meet their needs on the basis of their intersectional identities across axes of size, race, gender, sexual orientation, physical ability, and neurodivergence, participants often found the search process emotionally painful and exhausting. One option was for participants to

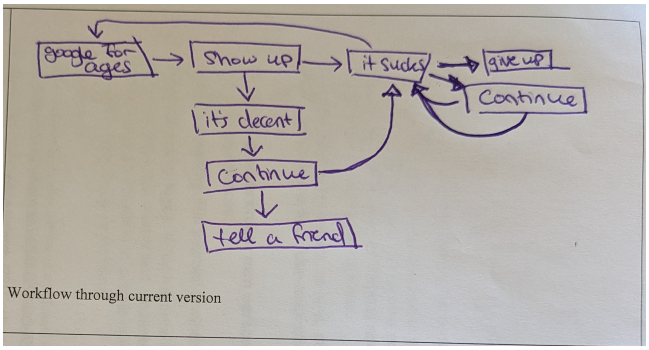

Figure 3: Existing process to find resources (W1): A participant highlights their process for finding fat-positive resources beginning with "googl[ing] for ages" and then following either a path where "it's decent" or "it sucks." If the resource is "decent," the path ends with "tell[ing] a friend." If the resource "sucks," the participant can either go back to googling, continue, or "give up."

encounter these feelings in their time-consuming and complex processes for identifying a fat-positive healthcare provider, and then still experience anxiety that this provider might not actually be sufficiently sensitive to their needs. Alternatively, they could give up on their intensive searches and go with a healthcare provider who was tolerable at best until they could not stand it anymore. Given these unappealing options, it becomes clear how insufficient technology to aid information-seeking can lead fat people to avoid healthcare providers altogether, an established risk stemming from anti-fatness and weight stigma [66].

5 PLUSTOPIA: A DESIGN FOR FAT LIBERATION

After engaging with design activities that uncovered the problems participants faced in using existing technologies for finding essential, fat-friendly services, they imagined technologies that could solve these problems. In this section, we describe the features and values of participants' envisioned system for finding fat-friendly resources and services online, in response to RQ2: How can future digital technologies be designed, redesigned, and reimagined to support fat people in safely and comfortably navigating the world? Our participants were most interested in designing a digital system that acted as a centralized point for information, community, and resources specific to the fat community, similar to Haimson et al.'s "Trans Yelp" resource imagined in participatory design sessions with members of the trans community [42]. In this section, we present a contribution to the emergent field of fat-positive HCI through the presentation of a set of features and values for a fat-liberationist system for information-seeking.

In what follows, we refer to this central system as "Plustopia," as dubbed and described by Cameron (Workshop 1),

> *I created **Plustopia**, a utopian online system to access fat friendly resources to be. If I were to go online and search, this is what I hope to achieve someday. Imagine a website similar to Google, where you can search for various things categorized by city and state. It's like the simple medical websites we discussed earlier, but for different categories like clothing, accessories, seating, healthcare, mental and physical fitness, accessibility, travel, and cars. This website would be regularly updated to keep up with changing trends and information. It would be great if a specific group could review and approve the content to maintain consistency and ensure we're all using the same standards.*

Across all three workshops, we found several recurring themes in participants' visions of an ideal system for accessing information about fat-friendly resources. According to our participants, the system needed to be a centralized "one stop shop" moderated and maintained by and for the fat community and updated regularly to maintain accuracy. They described having review-based ratings that relied on detailed information, rather than quantitative ratings, and "fuzzy" filter and search options that would allow them flexibility and control to find services that met their core needs. Two values also emerged as needing to be central to the system design and governance: radical fat positivity and intersectionality.

5.1 Logistical Features: Local, Centralized, Up-to-Date, and Community Moderated

As highlighted in section 4.1, existing information for fat people online is scarce and scattered across different platforms, making it difficult to find. Participants designed a centralized system that included fat-friendly resources across dispersed geographic regions, with localized search options. Figures 4 and 5 show some of the designs made by the participants that encapsulated this centralized, "one-stop shop" vision.

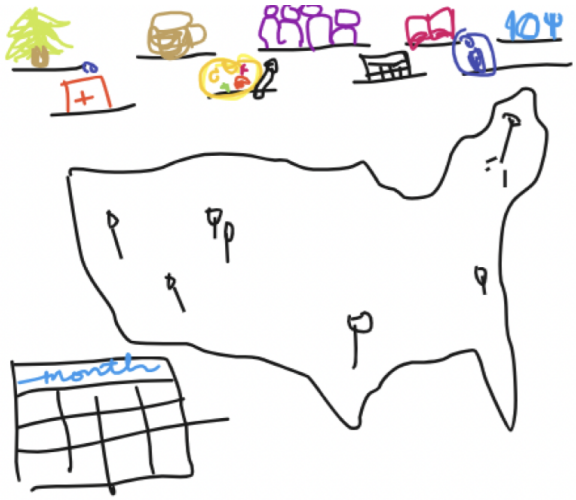

Figure 4: A centralized system (W2, Final Design) Here, the participant envisions a map-based system featuring pins highlighting local resources and events. The system includes a variety of categories of services depicted through sketched icons along the top (e.g., tree for hiking, mug for coffee shops) and a calendar for event posting depicted on the lower left.

In Workshop 2, participants designed a map-based system with resources across a variety of categories such as hiking, restaurants, books, medical care, and more, as depicted in Figure 4. Jamie (Workshop 2) highlighted the usefulness of a location-based system,

> *I think, primarily, the local thing is for finding events, [...] healthcare providers, and going to places that people can feel comfortable and can access. But then I feel like there's a lot more traveling happening too. [...] When I go to a new place, I don't know anything, I don't know anywhere. How can I find a place that I could just go get a coffee and go to the bathroom or sit in a chair and not be uncomfortable?*

Here, Jamie noted how localized recommendations across a variety of categories can help fat people better navigate the offline world, both in their local community and new places they visit.

As noted in section 4.1, a key challenge for finding fat-friendly services is that existing information online is often outdated. Therefore, it was important to participants to consider the logistics of how to ensure Plustopia was kept updated and accurate. Cameron (Workshop 1) shared, *"This resource should be consistently updated as things evolve, including changes in styles and advancements in medical knowledge"*, with Jordan (Workshop 1) adding that, *"these updates should at least be done biweekly"*, stressing the importance of keeping information up to date.

Along the lines of considerations of information accuracy, participants were thoughtful about the logistics of moderating their ideal system, considering the labor that would go into maintaining their system. As shown in Figure 5, moderation was central to some of the final designs that participants generated. In this design and in workshop discussions, community was central to the system and its moderation. As Jordan (Workshop 1) put it, if the system was not run by fat people, it would, at the very least, need to be moderated by people who *"get it"* and *"understand that [fat people] happen to be different, and different is not bad."* Here, Jordan demonstrates how fat positivity was central to Plustopia's moderation process, as well as other features. Participants' design of Plustopia, therefore, consisted of both logistical considerations and embedded values.

5.2 Features for Dynamic Diversity: Qualitative Ratings and Fuzzy Filtering

As highlighted in section 4.2, quantitative review systems such as star ratings were insufficient in providing enough specific details to be helpful to participants. Therefore, participants devised a review-based rating system for Plustopia that relied on detailed, objective information about services. Morgan (Workshop 1) described how objective specifics were important to account for the diversity of the fat community, *Something that might work for me might not work for you and I think it's important to be like, "These chairs fit these [sizes]," or, "There's no arms on the chairs," or something like that.* Here, Morgan provides an example to illustrate how high-level designations like "fat-friendly" or quantitative rating systems obscure more granular information someone would need to make an informed decision about if a product or business would accommodate them. In this way, our participants pushed back on technology designs that assumed uniformity of user characteristics, desires, and needs subsumed within generalizing designations like "fat-friendly."

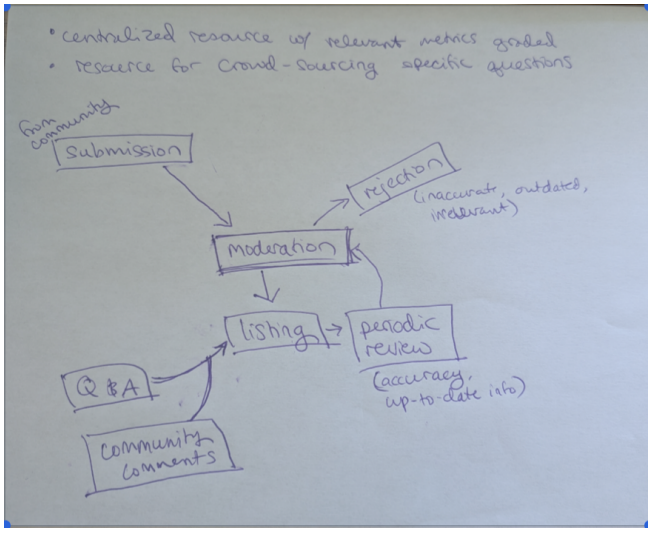

Figure 5: A centralized system (W1, Final Design) The participant designs features for a system, that is central to the fat liberation movement. Here they show the need to have a moderation process, where anybody can submit recommendations for services. This will they be moderated or vetted by the admin team, following which it will be released for other users to comment and rate. However, to ensure that information is accurate and up to date, moderators and users can periodically review and edit it if needed.

Instead, recognition of diverse characteristics, desires, and needs across time and spaces was at the heart of design recommendations, like qualitative rating and review systems for products and services.

In addition to descriptive reviews, participants envisioned a Q&A feature to crowdsource additional information about a business or resource. Riley (Workshop 1) provided an example of how this feature might work,

> *I think it would be helpful to have a way to, if you're a user of this community listening to opt in, say, "I can answer questions on this person." You don't have to write a review, you don't have to submit them initially. But if a question comes on that person, you get a little email ping saying, "Oh, a question came up on Dr. Whosit. Can you answer it?"*

Participants believed that this would not only enhance the utility of the system, but keep service providers accountable and the system more sustainable. Speaking to this point, Blair (Workshop 3) shared,

> *I think that actually even like, gives some accountability towards providers. Because if they're not offering, you know, fat-inclusive services, or like, being aware of those intersections, people can say, like, "Not a fat friendly provider, don't go to this person." It's almost like using Yelp, but it's just specifically for fat friendliness.*

Here, Blair highlights how they saw a community-based system like this affording collective action by providing a channel through

which fat people can put pressure on anti-fat providers by directing people away from them.

As noted in sections 4.1 and 4.2, participants struggled with poor search functionality in existing systems, as well as insufficient filtering options. Basic filtering and search did not allow for the nuances that participants recognized in what makes a provider acceptable or not for their unique, dynamic needs and interests.

As a solution to this problem, participants proposed "fuzzy filtering" in the system to give them more control over the results they were shown and how they navigated them. Fuzzy filtering was envisioned as allowing a user to select all of the filters they wanted but still showing them options that did not necessarily meet all of their needs. For example, in the context of searching for a healthcare provider, someone might select that they are looking for a female provider within 20 miles of their zip-code who is HAES-certified and LGBTQ+-friendly. Results would then be displayed with a visual indicator of which user requirements each result meets. As described throughout section 4, participants were used to having to settle for imperfect solutions, particularly in healthcare contexts where fat-positivity is rare. Therefore, they created a design feature that would afford them agency to select an option that they believed met their (subjectively-defined) bare minimum needs.

Riley (Workshop 1) shared in this context, *"I want it to be detailed and fuzzy searching. I'm open to considering services even if they don't match every single point I'm looking for. But I'd like a signal for those cases."* Figure 6 depicts a design with this feature, where a number of filters are checked and different results signal to the user that a provider is "competent in all your filters!" or "competent in 4/5 - here's what's missing."

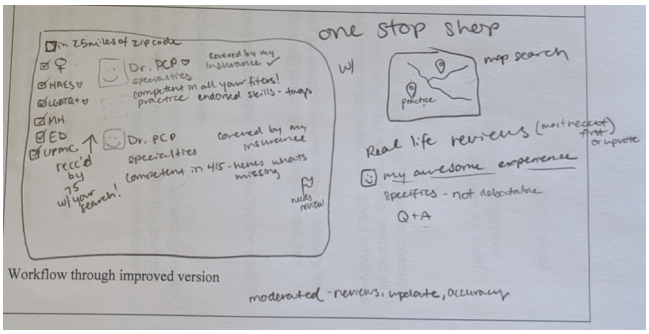

Figure 6: Fuzzy filtering (W1): The left hand side documentation shows how a fuzzy filtering process is important to the community, allowing them to be flexible in their choices, and ensuring that all necessary factors exist in the services they intend to use, while also having enough options to select.

Similarly, Reese (Workshop 3) noted the value he saw in being able to gauge where a given medical provider fell along a spectrum of fat friendliness, so he could balance the immediacy of his medical needs against his needs for fat-positive care,

> *So having, like you said, some kind of like, hey, this person might not be like the most fat friendly but at least they're not gonna like hound you about your weight. You know, like a scale [of fat friendliness] would be nice. That way, if the HAES-certified person can't get you in for two years, maybe the person that won't recommend surgery to you can get you in next week.*

Fuzzy filtering is a feature designed to account for the dynamic diversity of participants needs as they are situationally relevant. Their desires are not statically defined and, thus, filtering systems that expect a static and rigid set of requirements from users can hinder them in finding adequate services and care. Instead, they created a design that reflected the nuance and complexity they saw in their needs and related experiences.

5.3 Radical Fat Positivity

The most important value our participants expressed for Plustopia is for it to embody radical fat positivity. Here, "radical" underscores the difference between fat liberation and more normative branches of the movement such as "body positivity," which, as participants noted in section 4.2, can still be anti-fat. Inherent to radical fat positivity and our participants' needs from Plustopia is resistance to systems or providers that perpetuate weight loss as a means of achieving health or societal acceptance. This stance recognizes that such approaches are fundamentally at odds with the principles of fat positivity and can perpetuate harm and discrimination against individuals with larger bodies. Participants pointed to the pervasive anti-fatness that was present in other technologies to highlight misinterpretations of fat positivity that Plustopia should be designed to avoid. For example, speaking about the Instagram algorithm, Riley (Workshop 1) shared,

> *The issue that I have with the algorithm is that I feel like there's such a thin line between actual fat-positive content and super toxic, nasty, "Don't you want to lose weight?" content. And I feel like if I get into the algorithm for one, I start getting the other. And it's just like dodging bullets all the time.*

As noted in section 4.2, the lack of clear consensus on the meaning of "fat positivity" contributes to this problem. Our participants emphasized the need for an explicitly fat positive system that prioritized the ability to distinguish between fat positive and anti-fat content via community-defined principles. Casey (Workshop 2) explains,

> *I think what's really hard with the fat movement, too, is this threshold spectrum of what is considered weight-inclusive and fat-positive and what is the complete opposite where you do have the anti-fat bias. [...] And so somehow, within the app or the website, whatever, having this threshold of what is considered fat-positive. And that can get filtered into the system. And what is using the word "fat" malevolently, make it so it can't enter the system.*

These statements underscore the necessity for a system to accurately identify fat-positive content, ensuring that individuals seeking supportive, affirming spaces are not inadvertently exposed to toxic, harmful content. In light of this, the call for Plustopia to fully embrace radical fat positivity is paramount to provide a safe space for fat people to engage in community and find resources.

5.4 Intersectionality

Participants consistently highlighted the importance of intersectionality in fat positive spaces. Participants implicitly referred to intersectionality, through discussions of features such as fuzzy filtering that would allow them more flexibility to account for their intersectional identities in their use of the system. Participants also made specific mention of intersectionality when describing how a lack of accommodation of their intersecting marginalized identities impede their experiences in the physical and digital world:

> *Avery: It's been very difficult to find community. And when the community that is available in person is not accommodating to size, I also am in a position where I hit intersectionally, with my queerness and transness, as well as with disability and mobility. [...] You know, we're told as people of size that you cannot live in our society and then pushed online and if you are not comfortable or if those online spaces are not designed for you, then where do you go?* (Workshop 3)

The passage highlights the need for fat liberation tools and approaches to be aware of and responsive to the diverse and intersecting needs of their users. Avery's comment, as an example of sentiments expressed by participants throughout our workshops, emphasizes that a more inclusive and intersectional approach within fat liberation communities is vital to ensure that everyone, regardless of their intersecting identities, can find support and acceptance.

In addition to personal experiences, participants also described intersectionality in the context of the fat liberation movement's ties to other social movements, such as disability liberation, as Morgan (Workshop 1) does here,

> *I think fat liberation is very closely tied to disability liberation, not because fat people are inherently disabled but because the phobias amongst those two groups very much come from the same place in terms of whether or not a person fits a beauty standard, fits a standard of whether or not someone finds them attractive or whether or not someone views them as healthy, or whether or not someone views them as acceptable to be seen in public. I think those two groups are marginalized for very similar reasons, especially when it comes to visible disabilities.*

The adoption of an intersectional approach in Plustopia would facilitate space for the multifaceted identities of individuals within these communities. Participants' challenges trying to find spaces that would be sensitive to the intersecting marginalized aspects of their identities underscores the necessity of addressing fat liberation within broader conversations about social justice and inclusivity. Many of our participants emphasized that their needs and interests as fat people were shaped by race, gender, sexuality, disability status, and other dimensions of identity. Making explicit consideration of intersectionality in the design of Plustopia allows for a more holistic approach to combating discrimination and prejudice, empowering different communities to identify and come together for collective action.

6 DISCUSSION

The pervasiveness and social acceptability of anti-fatness creates challenges for fat people to find local services and providers, from restaurants to doctors, who will accommodate and accept them. Our participants shared that information about fat-friendly services typically travels through whisper networks in the fat liberation community. They further highlighted that when information is publicly collected and disseminated, it is disorganized, outdated, lacking key details, or otherwise inadequate. Moreover, they observed that the difficulty of finding informational resources about fat-friendly services is amplified for those with intersecting marginalized identities. Current technologies are not designed for the information seeking needs of many marginalized communities. Consequently, our participants described the challenges they faced identifying adequate services, for example, as a trans person of size, as compared to a cis person of size. Due to the aforementioned factors, finding fat-friendly services is significantly time consuming. This process can be emotionally draining, and the consequences of misidentifying a service as fat-friendly when it is not can cause significant psychological and even physical harm, particularly in the context of healthcare. Because fat positivity is not yet a widely recognized or accepted social cause, fat people often have to settle for a service that is "tolerable" because other, better options either do not exist or the time investment and emotional labor of continuing to search for something better is too great.

Our participants described a system that could mitigate these challenges and harms as their own utopia - "Plustopia." Plustopia is built on radical fat positivity and intersectionality, while still incorporating measures to account for the realities of anti-fatness and societal bias that users are likely to face out in the world. This system is largely centered around local, offline experiences, and helping fat people to navigate the offline world safely and comfortably with dignity. Participants emphasized the need for information to be kept up to date and critically considered the logistics of moderating the system to achieve this as well as to ensure that social interactions within the system would remain safe and free from the anti-fat bias they encounter in other spaces.

Features also centered around participants' recognition of intersectionality in their own and others' identities, and in the diversity of experiences and needs that fall under the broad umbrella of fat embodiment. Through these features, participants rejected designs geared towards a "typical" standardized user. For example, they described how reviews and ratings needed to be objective and specific. Quantitative star ratings, they said, were unhelpful as one fat person's 5-star experience may be unacceptable to another due to differing needs for physical accessibility or emotional sensitivity. Instead, they suggested a focus on detailed reviews and photos so each user could judge whether a service would work for them specifically. This design feature centers around the diversity present among members of a given community. In designing for diverse users, vague designations such as "body positive" and quantitative metrics are inappropriately reductive, expecting users to flatten their identities to better fit the system, rather than designing the system to be more expansive in its accommodation of diverse users.

Another key feature in participants' designs was fuzzy search and filtering. This feature was designed to allow users to select

filters for all of the qualities they wanted from a product or service, but still see results that did not meet every selected filter. Due to the pervasiveness of anti-fatness and other social biases that impacted our participants' intersectional identities, participants did not expect to be able to find results that would meet all of their needs. Therefore, they wanted features built into the system that would give them agency to make their own decisions about which of their needs to prioritize in given situations. This feature recognizes the dynamism of users' needs in response to different contexts of use. For example, someone who is fat and trans may prioritize their trans identity in identifying a healthcare provider for hormone-replacement therapy, but prioritize their fatness in identifying a primary care provider. While ideally this person would be able to find providers who were both trans- and fat-inclusive, our participants emphasized the reality that the scarcity of fat-friendly resources, services, and providers made this unlikely. As such, they imagined a tool that could accommodate tradeoffs.

Technology design can help intersectionally-oppressed individuals navigate an offline world that may be hostile to or unaccepting of their identities and needs. We draw on Gregor et al.'s [41] concept of Design for Dynamic Diversity (DDD) and Wong-Villacres et al.'s extension of Intersectional HCI [108] to translate our participants' designs into a framework for fat-positive technology design. While both DDD and Intersectional HCI reject the idea of a static user, instead bringing users' agency and dynamism to the forefront in interaction design, their key divergences can complement one another. Originally addressing an older adult population, DDD's conceptualization of a dynamic user centers on how users change with time, requiring new accommodations from interfaces. Yet, DDD focuses on physical and cognitive accessibility needs. Intersectional HCI helps direct attention to the multiplicity and dynamism of individual users' identities as well as the need to "view users as possible creators of their own stories" [108]. In their extension of Intersectional HCI, Wong-Villacres et al. highlight how users exercise agency in how they represent facets of their identity at different times. Intersectional HCI provides a lens through which we interpret our participants' design features which centered on their desire to more easily manage their identities in response to different scenarios of use. They imagined features that would allow them flexibility to embody all the identities they hold while simultaneously prioritizing those which may be most important or relevant to the task at hand. While Intersectional HCI tends to focus more on research methodology than design recommendations, DDD's pragmatism, with clear material design implications, aligns with the pragmatism our participants displayed in thinking through the logistics of their designs. Their needs from technology are urgent. Therefore, their designs accounted for societal barriers they face, with the potential for equitable technology solutions to help inspire social change.

It is fitting that this intersectional approach to design emerged from our workshops focused on fat liberation considering that anti-fatness is rooted in other systems of oppression, particularly anti-Black racism and misogynoir [97]. Due to anti-fatness' rootedness in broader systems of oppression, we argue that a framework for fat-liberationist technology design must also be rooted in intersectionality. Joining DDD with Intersectional HCI to support the inherent dynamism of one's identities as they intersect with fat embodiment supports this end. For the remainder of this discussion, we will refer to the integration of these frameworks as Intersectional DDD.

A key way that our participants' designs informed Intersectional DDD was through the feature fuzzy filtering, which would preserve self-determination in situationally weighing needs related to their dynamic, intersecting identities. Participants suggested that having a wide range of filter choices was important for them to be able to document their needs across domains such as physical access, LGBTQ+ identity, and Health at Every Size, but that choosing multiple filters would only be useful if they could still see results that didn't necessarily match all selected filters. Our participants were clear-eyed about the fact that they would not be able to find resources that fit all their needs, and they wanted the agency to view all search results and see which filters each result satisfied. A solution of fuzzy filtering - allowing the selection of multiple filters for the purpose of informing users of which results meet each filter, rather than removing non-matches from the results entirely - met our participants' needs to maintain agency over their choices while reducing emotional labor and time investment. In practice, this could be implemented in a variety of different ways. Rather than filtering out results that do not meet every selected criteria, results could be marked with different symbols to denote which criteria they meet, similar to the ways many menus denote different dietary needs (vegetarian, vegan, gluten-free, etc.). Filters may also indicate different levels, rather than binary checkboxes. Importantly, some needs are non-negotiable. If a restaurant does not have any seating options to accommodate a fat person, it will not matter to a fat person that they are LGBTQ+-friendly. Users could, with contextual consideration, mark certain filters as non-negotiables and others as desires, but not strict requirements. This is just one example of how a design feature aligned with Intersectional DDD might work in practice. Intersectional DDD is a lens that designers can apply to design technologies adaptable to diverse and dynamic identities and recognize designs like those our participants so often encountered, which they felt required them to dilute or stifle aspects of their identities to function.

7 LIMITATIONS

As we note in our positionality statement, we have conducted this research as non-member allies to fat liberation and, therefore, do not have the same expertise on fat experiences as our participants. While we have taken measures to mitigate this through member-checking and participant involvement in study design, our findings and discussion reflect the lens of allies, rather than members, of this group and cause.

While our sample was diverse along some facets of identity, most of our participants were white women. While the aim of our research was not generalizability, a more diverse sample would allow for insight into a broader range of preferences and experiences. A sample featuring greater representation of fat men and people of color, for example, might reveal some needs and interests unique from those we saw in this study.

8 CONCLUSION AND FUTURE RESEARCH

We have presented findings from a series of participatory design workshops with members of the fat liberation community to design a system that supports fat positivity. In alignment with a community-based approach, informed by design justice [17], we designed this study with a local fat liberation community organizer, who suggested we use these workshops to design a system for fat people to find safe and accessible local services. In this work, we contribute a series of features and values for the practical implementation of such a system. It is our goal that the features, values, and designs our participants developed in these workshops do not stop with this work, but can be used to inform the design of existing and future technologies to support fat liberation and the co-liberation of other marginalized users. Features and values of participants' design for this tool often centered around intersectionality, and their desire for digital tools to afford them the agency to include different facets of their identities in their search for services as they deemed necessary. Based on this finding, for our second contribution, we synthesize Gregor et al.'s [41] paradigm, Design for Dynamic Diversity with Wong-Villacres et al.'s extension of Intersectional HCI as a new design framework for fat-positive HCI. In the context of Intersectional HCI, we consider the design implications of interpreting "dynamic diversity" as referring to users' social identities, and their desire for dynamic control over how they (re)prioritize those identities in their use of digital technologies. While we have derived this synthesis from our participants' experiences as fat people, future research might explore how this framework can support marginalized communities in other social and technological contexts.

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