

Understanding Contestability on the Margins: Implications for the Design of Algorithmic Decision-making in Public Services

Naveena Karusala
Harvard University
Allston, United States
naveenak@seas.harvard.edu

Rajesh Veeraraghavan
Georgetown University
District of Columbia, United States
rajesh.veera@georgetown.edu

Sohini Upadhyay
Harvard University
Allston, United States
supadhyay@g.harvard.edu

Krzysztof Gajos
Harvard University
Allston, United States
kgajos@seas.harvard.edu

ABSTRACT

Policymakers have established that the ability to contest decisions made by or with algorithms is core to responsible artificial intelligence (AI). However, there has been a disconnect between research on contestability of algorithms, and what the situated practice of contestation looks like in contexts across the world, especially amongst communities on the margins. We address this gap through a qualitative study of follow-up and contestation in accessing public services for land ownership in rural India and affordable housing in the urban United States. We find there are significant barriers to exercising rights and contesting decisions, which intermediaries like NGO workers or lawyers work with communities to address. We draw on the notion of accompaniment in global health to highlight the open-ended work required to support people in navigating violent social systems. We discuss the implications of our findings for key aspects of contestability, including building capacity for contestation, human review, and the role of explanations. We also discuss how sociotechnical systems of algorithmic decision-making can embody accompaniment by taking on a higher burden of preventing denials and enabling contestation.

CCS CONCEPTS

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

KEYWORDS

algorithmic decision-making, public services, contestability, India, United States

ACM Reference Format:

Naveena Karusala, Sohini Upadhyay, Rajesh Veeraraghavan, and Krzysztof Gajos. 2024. Understanding Contestability on the Margins: Implications for the Design of Algorithmic Decision-making in Public Services. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*, May 11–16, 2024, Honolulu, HI, USA.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

CHI '24, May 11–16, 2024, Honolulu, HI, USA

© 2024 Copyright held by the owner/author(s). Publication rights licensed to ACM.

ACM ISBN 979-8-4007-0330-0/24/05

<https://doi.org/10.1145/3613904.3641898>

May 11–16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 16 pages.
<https://doi.org/10.1145/3613904.3641898>

1 INTRODUCTION

Globally, algorithms are being developed to automate or inform high-stakes decisions in public services, including determining access to affordable housing [12, 60], matching to public schools [65, 81–83], screening for child welfare [52, 84, 97], and allocating cash assistance [98]. Responding to calls for responsible artificial intelligence (AI) in public services, research in Human-Computer Interaction (HCI) has sought to better align the design of algorithmic decision-making tools with the needs, concerns, and values of affected communities and frontline workers (e.g., [16, 52, 60, 91]). At the same time, algorithmic tools need broader checks and limits regardless of how appropriately they are designed, given the scale and speed at which they can impact fundamental rights and social welfare [62]. These checks range from early measures such as requiring institutional justification to introduce algorithms [35], to measures after deployment, such as auditing [25, 72], enabling opting out of tools [72], and having the ability to contest a decision made by or with an algorithmic tool [62].

This last notion of contestability has been conceptualized very differently within policy, AI, and HCI spheres, resulting in disparate agendas for research and practice. Within policy domains, governments and think tanks across the world propose that people subject to algorithmic decision-making should have the right to contest [5, 13], engage an accessible grievance redressal mechanism [94], or receive timely human consideration and remedy [72]. However, AI research focuses more specifically on algorithmic recourse, where counterfactual explanations convey how decision subjects might achieve better outcomes from the algorithmic tool [48, 105, 106]. Counterfactual explanations make several assumptions about the information people seek after a decision, and about what exactly they would like to contest. Meanwhile, HCI has looked at contestability within the broader sociotechnical systems that algorithmic tools are embedded in, highlighting the information and mechanisms that are necessary to enable contestation, human intervention, and scrutiny of the tool [6, 61, 110]. Yet HCI work on contestability has not reflected the range of social and political contexts in which AI governance is being called for [79], including the Global South. There is also little work that links the situated

experience of contestation, especially among marginalized communities, to contestability of algorithmic tools. This poses the risk of further entrenching global and local power dynamics, granting “first-mover advantages” to dominant contexts in setting paradigms difficult to deviate from [69].

We address the gaps we have identified through a qualitative study of follow-ups and contestation in the context of public services. We focus on underserved settings in India and the United States (US). This allows us to build out a notion of contestability informed by the experiences of marginalized communities in contexts across the world. Drawing on our findings, we answer the following research questions:

- How do people accessing public services navigate opacity and adverse outcomes in decision-making processes? What are the factors that mediate their ability to follow up, appeal, or otherwise contest decisions?
- How might lived experiences with contestation inform the design of algorithmic decision-making processes that support people in navigating adverse outcomes?

We studied access to land and housing schemes in India, and access to affordable housing in the US. These are not settings where algorithms are used, but they are motivated by the increasing development of algorithms to determine eligibility and prioritization for housing-related services and other public services more generally. For example, the World Bank’s Global Program for Resilient Housing aims to use machine learning to identify homes at risk for damage from natural disasters, so that policymakers can implement subsidy programs for retrofitting or relocating [12]. Meanwhile, in the US, multiple AI-based decision-support tools are in development to help prioritize scarce affordable housing resources at the city level [26, 74, 101]. While many of these tools are in various stages of development, prior work has demonstrated that we need to understand existing inequities to avoid exacerbating them through the design of algorithmic tools [89], motivating our study of contexts without algorithmic decision-making. To compare and contrast settings, we draw on Kumar et al.’s proposal for engaging feminist solidarity for comparative work [59], which argues for bringing seemingly very different contexts in conversation with one another to illuminate insights that can inform research, design, and practice. Such comparisons allow us to counter the uneven representation of Global South contexts in AI ethics conversations, while demonstrating common issues across underserved contexts in multiple geographic areas.

We draw on interviews with affected communities, intermediaries such as non-governmental organization (NGO) workers, case managers, and lawyers, and public service administrators. We highlight how transparent and actionable information about decisions and processes, while necessary, are insufficient for contestation. Rather, it is the care work largely done by intermediaries, communities, and to some extent, administrators, that enables contestation. Further, this work is impactful not just at the point of a decision, but throughout a decision-making process. We draw on the notion of accompaniment in global health [31, 56] to highlight the particular nature of the care work that makes public services and contestation more accessible. By centering accompaniment at the

individual level, as well as how it is baked into public service procedures and policies (or not), we bring attention to how designing for contestability should acknowledge, support, and embody the work of intermediaries.

Our contributions are two-fold. First, we offer empirical data on processes of contestation in two contexts across the world, centering the experience of marginalized communities. In particular, we highlight the central role of accompaniment in enabling contestation, and call for a recognition of this care work when designing for contestability. Second, we offer design implications for algorithmic decision-making tools and processes in public services. We describe how social interventions, algorithm design, and algorithmic decision-making processes in public services might embody the care work of accompaniment to address not just outcome-oriented harms, but also process-oriented harms.

2 RELATED WORK

Our study draws on research on algorithms in public services, contestability of algorithmic tools, and existing appeals and grievance redressal processes. We also describe the notion of accompaniment and how we use it in this paper.

2.1 Algorithms in Public Services

Prior work, largely in the Global North, has looked at algorithmic tools in areas such as homeless services [50, 60, 91], child welfare [52, 84, 87, 88], job placement [9, 41, 42], and public health [44, 73], drawing out concepts that can guide the design of algorithmic tools in high-stakes contexts. A consensus is that ongoing engagement with affected communities is critical to ethical algorithm design. Multiple studies argue that inputs and outputs of algorithmic decision-support should focus on the strengths of affected communities and reparation [23, 96, 97], rather than deficits [16, 85], static notions of risk [87], or “ever-in” features such as history of incarceration [33]. Other prior work emphasizes the need to engage workers who use algorithmic tools. Studies highlight the importance of centering their goals and expertise [9, 52, 53], augmenting (over replacing) their discretion [85], and aligning with existing workflows [9, 85]. Alignment with workers is essential, given the growing body of work that highlights the necessity of care work in making datafied systems functional, less biased, and accessible to vulnerable clients [21, 24, 71, 83]. For example, Nielsen et al. describe how caseworkers’ care work enables them to counter or supplement data production, which shapes the outcomes of client cases [71]. Meanwhile, prior work has shown how misalignment of technology with workers impacts reliance on decision-support [50, 52, 53], values workers’ data work over care work [99], and produces process-oriented harms [86].

In Global South contexts, work on algorithmic tools in public services is more nascent but builds on a body of work on digitization in and through public entities more generally. Prior work has looked at the mixed effects of demonetization pushed by the Government of India in 2016, highlighting the way demonetization contributes to and is enabled by visions of technology-driven modernity [20, 76]. A line of work looking at the effects of Aadhaar, a biometrics-based identification database, uncovers how it worsens inequities in access to public services for already marginalized populations [92, 93].

Prior work also introduces the concept of “patching” to describe how upper-level bureaucrats iteratively alter sociotechnical systems in public services to fix implementation challenges [104]. More recently, research has described how many proposed AI applications in public health overlook the workflows, needs, and aspirations of frontline health workers [44, 46, 73, 100], and that even tools used at an organizational level to allocate resources still impact workers and their interactions with communities they serve [45].

We note that much of this research focuses on decision-support tools used by workers, though in practice, algorithmic decision-making used by government and development agencies may also be entirely automated [98] or used at the organizational level to plan resource allocation en masse [12, 101]. Still, this research demonstrates when and how people resist tools and policies in public services, and aims to fold their perspectives into improved design of algorithmic tools. However, we know little about how people decide when and how to contest decisions and systems, especially when power differentials are high and there are no workarounds to the impact of high-stakes decisions. In filling this gap, we strengthen our insights by comparing across governance structures and forms of marginalization.

2.2 Contestability of Algorithmic Tools

Even as we aim for appropriate design of algorithmic tools, policy proposals and regulations have sought to recognize and place checks on their inevitable limitations and uncertainties. Countries have described the need for contestability of decisions, oftentimes referring to completely automated systems, though prior work has argued that these concerns are applicable to semi-automated systems as well [8]. The European Union’s General Data Protection Regulation (GDPR) ensures the legal right to contest when decisions are based only on an automated system [5]. The Blue Print for an AI Bill of Rights from the United States White House recommends that people be provided access to human review and remedy if “an automated system fails, it produces an error, or you would like to appeal or contest its impacts on you” [72]. Guidance on responsible AI in India, written by NITI Aayog, the public policy think tank of the government of India, suggests that in cases of adverse outcomes, an “appropriate grievance redressal mechanism should be designed...” [94]. Both proposals emphasize that the process should be accessible and affordable to all.

In response to policy developments, there has been increased attention to algorithmic recourse in the AI literature. Conceived as a solution to GDPR interpretations mandating a right to actionable explanations, algorithmic recourse literature proposes generating counterfactual explanations and plans of action that allow people to change the outcome that they receive from an AI system [48, 102, 105, 106]. For example, if someone is denied a loan due to algorithmic decision-making, algorithmic recourse aims to provide an explanation that enables the applicant to reapply for the loan successfully. A counterfactual explanation might say that the loan would be approved if the applicant’s income increased by some given amount. There has been greater recognition that counterfactual explanations need to consider cost to the user, feasibility, and user preferences [77, 95, 108], and that they need to hold after model updates [48, 68]. However, there is very little work in this

space that looks at the usability of counterfactuals in practice, nor connects them to larger sociotechnical systems [54].

Algorithmic recourse makes the assumption that the decision was correct and that the onus is on decision subjects to reapply with new inputs. A small but growing body of work focuses on broader notions of contestability, or the ability to challenge and scrutinize decisions and decision-making processes, including in both automated and semi-automated settings [39, 57]. Some studies propose higher level frameworks for contestability, rooted in perspectives on Global North bureaucracies and industries [6, 62]. Alfrink et al. propose that contestability be accounted for in multiple ways, from safeguards built in by AI developers, to tools to override, scrutinize, or appeal decisions and the algorithm itself. Other frameworks may not use the term contestability but grapple with algorithmic limitations more generally, emphasizing the importance of existing mechanisms for redress [7], human discretion where algorithmic decisions are uncertain [75], and justification of decisions based on individualization and uncertainty [19].

Other studies gather empirical results with implications for contestability, largely using surveys or experiments. Yurrita et al. find that explanations and appeals contribute to fairness perceptions, but explanations do not help question structural aspects of the decision-making process [110]. They and other researchers suggest that reflections on how algorithms were designed and why, decision-making flows, and known limitations could support scrutiny and protective action [17, 39, 109, 110]. Regarding who should review algorithmic decisions in an appeals process, Lyons et al. find that human review is desirable because it could offer more pathways for dialogue and influence compared to algorithmic review [61, 63]. A body of work also looks at how to support contestation of systems themselves through auditing [25, 27, 90, 103] and critical scholarship and community advocacy [32, 51, 58]. Importantly, whether such forms of transparency and investigation actually lead to accountability is dependent on factors like critical awareness of users [55, 79], legal recognition of harms [67], consumer and competitive pressures [78], and the extent to which technology companies co-opt advocacy to perpetuate their goals [32].

There has been increasing examination of contestation of algorithmic tools in Global South contexts. A recent report on the risks of AI in India’s judicial system reaffirms the need for transparency and avenues for contesting incorrect decisions [11]. Empirical data points to how in practice, among vulnerable individuals subject to high-stakes decisions made by AI in domains like loan processing, hiring, and medical diagnosis, perceptions of AI authority and feelings of indebtedness and obligation are more salient than skepticism or feelings of injustice [47, 79]. Ramesh et al. suggest that algorithmic accountability, particularly in non-Western contexts, must go beyond technical approaches to also enhance critical awareness and collective transparency and sensemaking [79].

Given that much of the work linking contestation with design comes from a theoretical and quantitative perspective, we contribute an understanding of contestation as a social process, highlighting motivations, care work, and conditions that enable contestation. Answering calls for understanding the relationship between sociopolitical contexts, accountability, and agency, we anchor our analysis in marginalized communities across the world to highlight needs across Global South and North binaries.

2.3 Appeals and Grievance Redressal in Public Services

There have been studies of grievance redressal and appeals from social and political science perspectives. Ethnographic studies of appeals in many Global North settings focus on how their materiality, temporality, and spatiality affect communication or performance of legal roles [34, 38]. Documentation and information also play a key role in contestation, and social workers can be highly influential in constructing communications such that contestation becomes easier or harder [10, 15]. In India and the Global South more broadly, there has been extensive research on grievance redressal mechanisms, which have become increasingly widespread features of governance and development programs. A recent literature review [43] discusses how such mechanisms can enable improved service provision and result in more equitable policies, but only if there is political will and capacity for frontline workers to act. Digital tools for grievance redressal have tended to be unidirectional and opaque, and not equally approachable for all citizens [43]. Intermediaries are thus essential for interfacing with public services, with platforms like Gram Vaani organizing volunteers to follow up on citizen complaints [43]. Acknowledging inequities in access to redress, our work expands on the specific contributions of intermediaries and communities in enabling contestation and how they could inform contestability of algorithmic decisions.

2.4 Accompaniment

We draw on the notion of accompaniment to highlight how care work, especially that of intermediaries and affected communities, makes contestation possible. This framing aligns with increasing recognition of care work in HCI [22, 49], and specifically the care work of making technological systems accessible (e.g., [71, 83]). Accompaniment is a concept developed by physician and medical anthropologist Paul Farmer, rooted in his work on community health across Haiti and the US. He defines accompaniment as not only continuous and responsive medical care, but also solidarity with the patient, and management of the context of illness through services like financial support [14]. The concept has been applied beyond community health and individual interactions, with relevance to policy [56] and design work [40]—this allows us to analyze how accompaniment manifests at the individual level as well as in the policies and procedures of public services.

There are multiple facets of accompaniment, regardless of the context, that we highlight in our work. Differentiated from paternalistic concepts such as philanthropy, accompaniment is characterized by epistemic humility on the part of the accompagnateur, who should seek to de-center their own knowledge to learn from the person being accompanied [30]. It is also intentionally open-ended and focused on concrete acts, with emphasis on sticking with a task until the person being accompanied has deemed it completed—not the accompagnateur [30]. This open-endedness also resists bureaucratic checkmarks as a marker of having practiced accompaniment [80]. Additionally, accompaniment is for everyone—accompagnateurs may also require accompaniment [30]. Accompaniment allows us to highlight where values such as epistemic humility, open-endedness, and solidarity support contestation.

3 METHODS

3.1 Setting and Motivation

Our study took place across two sites: a block in the Chennai Metropolitan Area in Tamil Nadu, India, and cities in the Boston Metropolitan Area in Massachusetts, US. Throughout the paper, we anonymize specific locations, as many participants spoke to us with the expectation of anonymity. In both locations, we studied how people perceive and navigate follow-ups and contestation of adverse outcomes in the process of availing housing-related benefits.

3.1.1 Chennai Metropolitan Area. The Chennai Metropolitan Area is made up of multiple administrative districts, each divided into blocks. We focused on one block within one of the districts. This block has a population of approximately 211,000 people, and approximately 80% live in rural areas. Three percent of this population is made up of those belonging to Scheduled Tribes, or Indigenous people of India who are recognized as a historically marginalized group and are thus afforded rights to representation in government, education, and other domains [107]. To conduct the study, our access was facilitated by an NGO operating in the area for the past eight years, focused on community development and access to housing in Irula communities, a Scheduled Tribe in Tamil Nadu. Thus, our understanding of the work of availing housing was situated in Irula communities' experiences. Connection to land and natural resources is an important aspect of Irula and other tribal communities' identity, culture, and lifeways [107]. Yet tribes have been subject to significant displacement and lack of access to land over the period of British colonization, through caste-based hierarchies in land ownership, and on account of development projects undertaken by the independent Indian state [107]. Scheduled Tribes thus face high rates of poverty and landlessness [107], making access to government schemes for land and home ownership important.

In studying access to government housing schemes, we found that the application process took years. The most salient aspect at the time of our study was applying for a free patta, or land deed, that is required before being able to construct a house at the site. One can apply for a patta where one has been living, or in a different area identified by community members or government officials. There were multiple stakeholders involved in this process. One was the *applicants* themselves who were seeking a patta. Another was *coordinators* and a *lawyer* who worked with the NGO and supported applicants with pattas and other required documents. Another was the *appointed district administration* and *local elected leaders* who process and approve patta applications. Within appointed district administration, this includes the district collector at the highest level, the revenue divisional officer, tehsildar, and revenue inspector at the block level, and the village administrative officer at the village level. Within the elected Gram Panchayat, or village council, patta applications must also be approved by the panchayat leader.

3.1.2 Boston Metropolitan Area. The Boston Metropolitan Area is composed of dozens of cities and towns, of which we focused on two cities. Combined, they have a population of around 120,000 people. The cities' demographics reflect significant immigrant communities and racial diversity, composed of 25% to 44% immigrant populations, and 5% to 8% Black, 4% to 10% Asian American/Pacific Islander, and 12% to 66% Hispanic populations. In the past several years, due to

gentrification, rising cost of homeownership, and lack of enough investment in subsidized housing, lower-income households have been increasingly subject to housing instability and displacement. Further, those who are chronically homeless are unable to access the permanent supportive housing needed to exit homelessness. These issues disproportionately affect marginalized communities such as undocumented immigrants who are more vulnerable to tenant rights violations. They also affect Black, Indigenous, and Latinx communities who are subject to higher rates of poverty, housing discrimination, and incarceration in Massachusetts [2, 18].

In this context, we studied the processes of applying for public housing and rental vouchers, as well as for priority status for such services. We also looked at cases where people already had public housing or a voucher and whose benefits were being terminated by the housing authority. Finally, we also looked at cases where people were applying to inclusionary housing (a percentage of private developments that is required to be affordable) or using a rental voucher to rent on the private market. Stakeholders in this context include *applicants* who are seeking or trying to maintain housing assistance. They also include *case managers* who support people in applying for assistance, appealing denials or terminations, and/or accessing other supportive services that contribute to housing stability. *Lawyers* who are part of legal advocacy organizations can also become involved if people contact them when choosing to appeal adverse outcomes such as application denials or terminations. Finally, a *housing authority* for a given city processes applications, maintains public housing properties, and presides over appeals. Workers supporting these functions include tenant selectors who maintain waitlists for housing and process applications, higher-level workers who conduct criminal records look-ups, and hearing officers who preside over appeals.

3.1.3 Motivation for Context and Comparison. We chose to focus on land and housing because they are high-stakes decisions. Receiving these benefits can be a matter of safety, physical and mental health, and stability. This is a case where it is especially important to design for contestability, as a way to ensure due process and that these services can actually meet their intended goals, rather than reifying historical exclusions. We acknowledge that there are significant differences in each context, including the specific benefits and application processes studied. However, in both cases, because the services we focused on are intended to serve marginalized populations, we are able to look at how accessing these services brings people in contact with the state, requiring them to navigate significant power differentials and control over distribution of resources.

3.2 Data Collection

3.2.1 Chennai Metropolitan Area. Naveena collected data in July 2023. She conducted three interviews with the NGO's coordinators and legal advocate, and six interviews with district and village administration. She also visited three tribal villages, where she conducted group interviews with three to ten people each. Participants are summarized in Table 1. Many of these meetings were largely facilitated by the coordinators working for the partner NGO, who were from Irula communities themselves and had been working with the NGO for three to eight years. Naveena reached out to the

ID	Role
C1-7	Village A Applicants
C8-10	Village B Applicants
C11-20	Village C Applicants
C21	Coordinator
C22	Coordinator
C23	Lawyer
C24	Village Administration Officer
C25	Revenue Inspector
C26	Tehsildar
C27	Revenue Division Officer
C28	District Collector
C29	Panchayat Leader

Table 1: Participants in the Indian context

ID	Role
B1	Applicant
B2	Applicant
B3	Applicant
B4	Applicant
B5	Applicant
B6	Applicant
B7	Case Manager
B8	Case Manager
B9	Lawyer
B10	Lawyer
B11	Lawyer
B12	Housing Authority Tenant Selector
B13	Housing Authority Hearing Officer
B14	Housing Authority Deputy Director
B15	Housing Authority Executive Director

Table 2: Participants in the US context

district collector directly, and contacted a panchayat leader through a chain of referrals from the partner NGO.

Interview questions with applicants focused on experiences with applying for pattas and other benefits and deciding on next steps when responding to adverse outcomes. Questions asked here included "What was the application process like? What were the most challenging or surprising parts?", "What was your initial reaction when you learned the decision? How did you decide what to do next?", and "Can you walk me through your appeals process? What was the most challenging part?" Interviews with the coordinators and lawyer focused on how they supported people in applying and following up on applications and adverse decisions. Questions included "When do you decide to appeal, reapply, etc.?", "How do you support applicants through this process?", and "How do you decide what you need for a successful appeal, reapplication, etc.?" Interviews with government officials focused on experiences with processing and providing decisions on patta applications. Questions included "What are the range of reasons for denials?" and "How do applicants respond when they get denied? What interactions do you have with them after denial?" Interviews were between 30 and 60 minutes, and took place in person. The interviews were in

Tamil, Telugu, and English; Naveena speaks Telugu and English and relied on an NGO worker to translate for interactions in Tamil. We did not record interviews as we found that participants were more comfortable. Instead, we took extensive handwritten notes, taking the time to note down quotes if they were particularly illustrative, and wrote them up in further detail soon after the interaction.

Applicants were composed of 18 women, and two men. Patta's and homes are provided in women's names, and they were important stakeholders in the process. Additionally, we visited villages around noon, when women were present, often doing unpaid care work, while men were elsewhere for paid work. With respect to caste location, other than the applicants and coordinators who were from Irula communities, all other participants we spoke with were dominant caste. We note that there are multiple terms that can be used to describe tribal communities in India; in this paper, we use the terms that applicants used to refer to their community, which was either Irula or Scheduled Tribe people, sometimes shortened to ST.

3.2.2 Boston Metropolitan Area. Naveena and Sohini collected data between April and June 2023. We conducted 15 interviews with the various stakeholders: six applicants, two case managers, three lawyers, and four housing authority staff across two cities. Participants are summarized in Table 2. Of the six participants using housing assistance, there were three Latina, one Black, and two White participants. Participants consisted of five women and one man. All other participants were White, except for one case manager who was Latina and one housing authority staff whom we do not have demographic data for. We recruited participants through snowball sampling, starting with lawyers and case managers, who were then able to help recruit people who had experience applying for housing assistance. We also reached out to people using housing assistance by flyer near a housing authority office and affordable housing. We also contacted housing authority staff directly.

Interview questions were similar to above. We focused on experience with the application and appeals processes (if they had gone through it), the forms of labor involved in decisions, denials, and appeals, the nature and extent of interactions between stakeholders, and pain points in the application and appeals process. Interviews were between 60 and 90 minutes and took place largely virtually via phone or Zoom, with a few taking place in person. All interviews took place in English, except for one which took place in Spanish, using a human translator through a phone-based service.

3.3 Data Analysis

We used inductive interpretive analysis to analyze the data [66]. Throughout data collection in both contexts, Naveena discussed the data with the other authors to understand gaps that could be filled in future data collection. Naveena conducted open coding on the data from both contexts, with Sohini participating in coding the US data. Our aim was to understand the experience of contestation and the structures that shape it. In the Indian context, we labeled codes such as *“burden of travel”*, *“discrimination from officials”*, and *“strategizing through community meeting”*. In the US, we labeled codes such as *“language barriers”*, *“translation up to discretion”*, and *“coaching applicant for credibility”*. We also wrote memos as we coded, noting aspects of the data that were particularly interesting or related to

concepts that we had seen in the literature. Naveena then grouped codes into themes, such as *“barriers to accessing rights”*, *“power differentials between people and state”*, and *“sociality of coordinating contestation”*. It was also at this stage that we engaged with the framing of accompaniment in thinking about how to highlight parts of our findings, given the extensive care work needed to overcome barriers to public services.

In constructing the findings based on both contexts, we draw on the methodology described in Kumar et al.'s work on comparative studies [59], which builds on the theoretical and methodological contributions of feminist scholars Chandra Mohanty [70] and Rita Kaur Dhamoon [28]. Kumar et al. start by demonstrating commonalities in struggles and processes of resistance within systems of domination across two contexts. Using commonalities as a foundation, they scrutinize points of difference to generate possibilities of deeper questions for research, design, and practice. Using this process, we center the findings on three shared struggles related to accessing public benefits, highlighting similarities, differences, and the role of accompaniment in each.

3.4 Self-disclosure

We are researchers with backgrounds in HCI, AI, tech policy, and sociology, based in US universities, with combined experience conducting research in the US and India. This study came out of the desire to interrogate the unexamined assumptions and narrow scope underlying some key areas of AI research and practice, and to inform sociotechnical design choices that avoid reproducing inequities. In collecting and analyzing data, we acknowledge our relative socioeconomic and caste privilege; we were outsiders inquiring into complex community power dynamics and sometimes highly stressful experiences of navigating public services. In recognition of this, we took care to ask questions sensitively and with openness to understanding a range of experiences. We also made sure to ask questions to check our understanding with participants, especially across language. Working with intermediaries was especially helpful here, for approaching interactions with care and gaining context.

4 FINDINGS

Our findings center on three struggles related to contestation and how they take shape in the Indian and US contexts: navigating opaque public services and bridging information and action, navigating power differentials to achieve better outcomes, and working beyond the system to contest unresolved injustices. Throughout, we highlight the care work of accompaniment—by intermediaries, community members, and to some extent, public service administrators—to demonstrate how it enables contestation.

4.1 Accompaniment as Enabling Transparency and Acting on Information

HCI and AI literature is often agnostic about why adverse outcomes occur in the first place, focusing on the idea that transparency, such as explanations of adverse outcomes, is important regardless for contestability; the literature also operates on the assumption that people are able to act on explanations and other information to then contest a decision [6, 48, 57, 62]. However, we find that there

are numerous barriers to understanding how to create a successful application, which can result in adverse outcomes that are then also costly to follow-up on or appeal. Below, we describe how intermediaries are key in helping applicants learn about and apply for benefits, and act on explanations of adverse outcomes—in essence, they help address process-oriented harms that lead to denials or impede contestation. We also point out instances where public service administrators ease or obstruct access to helpful information.

4.1.1 Enabling Access to Inaccessible Public Services. In both the Indian and US contexts, intermediaries helped overcome many of the structural inequities in navigating public services. In the Indian context, applying for a patta first required several documents and IDs which families needed to apply for if they did not already have them. After gathering these materials and applying for a patta, families may also need utilities such as electricity and water to be set up by the local government. The coordinators had gathered a rich understanding of the barriers families faced in applying for pattas and relevant documents, demonstrating the epistemic humility required for accompaniment. It was challenging for families to prioritize the tedious work of applying when the need was not immediately obvious (given that the final outcome of a home was further downstream). Applying required families to take time off from work to coordinate transportation, travel long distances from one's village to government offices, and pay to make copies of their documents, resulting in them losing income. Further, government officials may claim that applications were never received, so multiple follow-ups might be needed to ensure they received attention (as we will describe in more depth below). Acknowledging such challenges allowed the coordinators to share in the labor required to interface with public services. Coordinators helped put together applications to reduce the burden on families of learning about the opaque process themselves. Coordinators would also tell families when their presence was required in person at government offices, taking on the more persistent (and tedious) work of following up on applications themselves.

Coordinators were also able to leverage their knowledge and relationships with government officials to support applicants in avoiding denials. Coordinators worked to build relationships with new government officials as they entered office, which helped them understand how much they could be relied upon. C22 explained how he makes a point to introduce himself and explain the work that he does for Scheduled Tribe communities. Leveraging these connections, coordinators were able to learn about the intricacies of application processes from government officials, like what to do in exceptional cases such as applying for a patta for land that was already owned by others who had since passed away. In comparison, we heard from applicants who used to go individually to the revenue division officer to apply for pattas but were not able to learn anything about the proper procedures even after several attempts, indicating the persistent opacity of public services for marginalized communities.

In the US context, accompaniment was similarly essential for navigating options for housing assistance amidst social and economic constraints. B2 noted how finding resources was emotionally and mentally taxing when experiencing housing instability: “A lot of people are burdened or suffering from trauma or overwhelmed, you

know, they don't know what to do. And so then what happens?” Case managers could be extremely supportive in these cases by doing the open-ended work of helping navigate options to eventually find stable housing, and ensuring clients are prepared for each step of application processes. This was especially important as there was generally a 10-day limit to respond to communications from the housing authority. Such timelines help the housing authority close cases and ensure valuable housing units do not stay empty, but made it challenging for applicants who may not know they need to keep track of communications and be ready to respond. Again, open channels of communication between housing authorities and local NGOs were helpful in ensuring case managers could set clients up for success.

Similar to the Indian context, we saw the extent to which case managers uniquely enabled actions that clients may not be in a position to take otherwise. For example, B1 was denied priority status by the housing authority and successfully appealed the decision. Much of her narrative did not mention any of the reasoning behind the denial or basis for the appeal, despite having a case manager who was able to explain what was happening. When asked if she knew in the end why she had been denied, she said “*No, you know, I, I still don't understand actually why we were denied.*” Rather, she shared much more about the difficult emotional experience of being pushed out of her current housing, such as her surprise and fear upon finding out about the complaints tenants had about her young son. Ultimately, the fact that she had a case manager who was not only able to understand her denial, but also guide her through the appeals process, contributed significantly to her ability to contest.

Applicants could certainly learn about the application or appeals process by going to the housing authority directly, demonstrating how the work of accompaniment could also happen within public services. Given the smaller power differential between applicants and housing authority staff compared to the Indian context, applicants seemed to have relatively more success. However, there were sometimes barriers here as well, and case managers were also helpful for equitable access to knowledge. For example, B8 shared how the housing authority staff screening one client for state public housing was asking for information that, according to the state regulations, was not actually required—this type of double-checking could be very impactful for undocumented immigrants who may not be able to produce certain documentation and would otherwise receive a denial. Ultimately, it seemed that the level of intensive support needed was not always possible for the housing authority to provide, leading to some appeals happening simply to “*...sit there and explain the process exactly of what is needed [for an application]...*” according to B15.

4.1.2 Overcoming Apprehensions around Contestation. The work of accompaniment also entailed solidarity and support in addressing apprehensions in interfacing with public services, which could be a barrier to contestation. In the Indian context, many women shared how they were hesitant to meet individually with government officials to advocate for their requested pattas, affirming prior work [43]. A few women in one village shared the sentiment that “*...unlike people who have studied, we can't speak well or courageously.*” We see this as a sign of the power differential between government officials and Irula communities, where government officials can

choose whom they listen to or not, particularly if they are dominant caste. The coordinators addressed community members' apprehensions by physically accompanying applicants to meetings. They also relied on collective strategies such as letters to government officials from multiple families seeking pattas or other benefits, when needed. However, there was still fear of retaliation given the power that officials had over people's lives. For example, residents in one village explained how a panchayat leader deprioritized them for government housing as retaliation for not supporting him in local elections.

Despite these apprehensions, we found that applicants in the Indian context were ultimately still willing to contest decisions, particularly using collective methods. In contrast, in the US context, apprehensions manifested more as an unwillingness to contest at all. People facing language barriers, immigrants, and those with cognitive impairments may view appeals as risky or not understand the value of going through with them. B1, who immigrated to the US from El Salvador, explained why she did not want to go through with an appeal in her case: *"It's not what I do, like to stir up trouble... because I'm an immigrant... if they can help me, great. But if not, I respect that... I'm very grateful that I'm here and I'm being allowed to live here."* Again, we found that accompaniment was key to addressing discomfort here. B7, a case manager, shared how in addition to communicating in the client's language, she built trust and pulled in social support:

"Once we build this trusting relationship with clients, they tend to believe you. [We] explain to them in detail using lay language... what are the options, because if we don't appeal, we don't have a house... And the other thing... is that there is someone that the client trusts at home or a friend... it's the case that the friend understands better the big picture than the client. And it's the friend that also works for us in a sense of explaining to the client, you know, what the benefits might be if you appeal."

We note, however, that being convinced in one instance may not actually change clients' perspective on contestation more broadly. When asked if she would go through with this process next time, B1 insisted that she would not, because *"I don't wanna bother anybody... I'm just very grateful that I'm here [in the US]."*

We see how in the Indian context, hesitancy came from the possibility of not being heard, but applicants had the conviction to act and ensure their access to benefits. In the US, especially for immigrant populations, apprehension stemmed from not wanting to create "trouble" and demonstrating gratefulness. This could be traced to the differences in relationship to the state—imaginaries of opportunity in a new place may shape notions of risk differently compared to histories of displacement and the desire to preserve community. Further, while the participants in the US context had the right to appeal, in India, we see the possibility of more retaliation due to the power differential between government officials and Scheduled Tribe communities, which had implications for methods of contestation and capacity-building efforts.

4.1.3 Challenges in Connecting to Intermediaries. Intermediaries were important in enabling access and action, but a significant difference across contexts was how intermediaries were able to get

in touch with applicants who need support. In the Indian context, the coordinators had been working for the past year with specific Scheduled Tribe villages, going door to door to survey which family members had which documents or benefits, and whether the family had a patta, a permanent house, and various amenities and utilities. Given the rural setting and distinct boundary of villages, coordinators were able to be systematic in understanding where support was needed. Coordinators were from these communities themselves, which helped establish trust and long-term relationships.

In contrast, participants in the US context noted that there were challenges in connecting to applicants when they most needed support with accessing resources or appealing denials, possibly due to population size and heterogeneity. For denials from the housing authority, information about the right to appeal and about legal services were shared along with denial and termination letters in an attempt to strengthen connections, but this did not necessarily mean uptake. To strengthen timely outreach to people in precarious situations, case managers used strategies like reaching out through school liaisons, or reaching out to people who are currently involved in housing court. Lawyers we talked to also shared that they relied on applicants being referred to them by other legal agencies, and were experimenting with pop-up clinics to further the reach and type of support they offered.

4.2 Accompaniment as Addressing Stakeholder Incentives in Contestation

Policymakers have suggested that people need to be able to turn to a human to review a decision, and literature in HCI has shown how people desire human review because it supports fairness and allows for influence in the process [61, 63, 110]. Our findings demonstrate that influencing decisions and decision-makers is a political process. Intermediaries and applicants working in solidarity was essential to enabling influence in the process. In both the Indian and US contexts, contestation might take place after being told that applications were no longer under consideration, or after a denial. In both cases, participants considered how they might work with or against the incentives of public service administrators and other stakeholders to achieve accountability and better outcomes.

4.2.1 Holding Decision-making Processes Accountable. As a senior leader at the partner NGO told us, *"There is no such thing as just applying for a patta and getting it."* Officials asking for bribes to even acknowledge an application was rampant, especially if families tried to apply for documents or pattas by themselves. We also heard from participants that revenue division officers, who receive numerous applications, would simply forget about applications if they were not prompted. There were strategies that the coordinators used to make it difficult for government officers to claim they never received an application. As mentioned in the previous subsection, the coordinators suggested that families make copies of applications before submitting so that they could produce that copy later. The coordinators were also careful to date the application according to the day it was submitted. During any follow up meetings, coordinators would ask the government officer to sign the application copy on the date of the follow up, so as to have proof that the coordinator had followed up. Coordinators might have multiple follow up meetings every week or two. However,

there might be cases where government officials are persistently unresponsive. In this case, coordinators could use a Right to Information request [1] to understand where the application was, and ensured applicants were aware of this right as well. As one NGO worker indicated, accompaniment required innovation: *“The NGO has changed how follow ups are done. The coordinators know down to what table the application is on.”*

Another strategy for ensuring applications were accounted for was advocating with higher-level officials. In some cases, this could make it more difficult for lower-level officials or politicians to ignore or dispute the application. Instead of submitting an application to a lower-level official directly, one could go on Mondays to submit through the district collector’s office, a 45 minute bus ride from the block center. Mondays were dedicated to receiving petitions and grievances and all block-level officers, namely the revenue division officer, block development officer, and tehsildar for each block, were required to be available. In one observation, a coordinator handed an application directly to the collector and deputy collector, who then called the revenue division officer up and asked him to oversee the application. The revenue division officer affirmed to the coordinator with a nod that he would take care of it, after which the coordinator left the hall. This spatial and physical hierarchy creates clarity that the order comes from above.

In the Indian context, responsiveness could not be taken for granted, and the burden of following up was almost entirely on applicants. In the US context, the housing authority was more communicative about application status, but we found that there were similar challenges in ensuring information reached applicants. Overall, applicants for public housing or vouchers could be on the waitlist for years given the scarcity of housing resources. The housing authority periodically purged the waitlist or asked for more information once someone got to the top of the list, and those who did not reply in time were removed. One issue then was when participants were surprised to find out they had missed a communication and had been removed. B6 shared that she regularly followed up on her application for about a decade, but on one such visit, she found out that her name had been removed and staff only told her, *“It’s not here. Reapply.”*

From the housing authority’s perspective, they send all mail by certified mail, which requires a signature upon delivery and ostensibly offered some security. Phone calls were seen as unreliable due to changing phone numbers and weak ties to identity. Yet staff also admitted to issues of communication, highlighting how certified mail was a sort of bureaucratic checkmark as against more persistent accompaniment. B14 noted that the response rate to pre-denial letters, where applicants were given a chance to contest a possible denial based on their criminal record, was low, speculating whether people even received the letters. B12 noted how she tried to tailor communications to applicants when possible. For example, if the address on file was a homeless shelter, where people did not check mail regularly, she waited a couple of extra days before sending a denial or withdrawal letter. If she knew that someone does not speak English based on personal interactions, she would also send a translated letter, using Google Translate. However, this discretion was up to staff, and dependent on what they knew about applicants. Accompaniment was helpful in advocating for extensions if deadlines were missed. Participants could ask for extensions directly,

but as B7 shared, the specific positionality of intermediaries could be important for pushback: *“Once there is a lawyer, [the housing authority] is kind of flexible. Lawyers know how to write a letter and say, you know, this is the reason, maybe client doesn’t speak the language. And [the housing authority] didn’t do the job properly.”*

4.2.2 Strategizing to Align with Stakeholder Incentives. Upon actually being notified of an adverse outcome, intermediaries strategized with applicants about how to best approach contestation, particularly given the incentives and needs of other stakeholders in the decision-making process hold. In the Indian context, we found that other stakeholders within a community may disagree with allocation of particular pieces of land for pattas—here, accompaniment meant swaying local stakeholders’ decisions. For example, the panchayat leader is required to sign off on patta applications, but they may decide that they want that land to be used for other community features like a wedding hall or panchayat office. There may also be caste politics at play. According to C24, the legal advocate for the NGO, most panchayat leaders in the district were dominant caste, and there was an underlying passivity to supporting community development precisely because it would allow Scheduled Tribe communities to thrive: *“They [dominant caste leaders] don’t like when [Scheduled Tribe] people are able to construct a house and a permanent life. They don’t prefer that because they need their labor, for example, for cleaning.”* In cases where there is resistance from the panchayat leader, it may be possible for coordinators or their project manager to speak with them and advocate for the community. Given that panchayat leaders are elected, communities could also threaten to not re-elect them as a way to sway their decision.

Disputes might also arise between communities seeking land. A group of families in one village was applying for pattas and the land they sought in particular had been sold to people external to their community. According to one of the coordinators, the families felt strongly that the land should be redistributed rather than them finding land outside of their community. According to C23, as a very small minority within the district, *“ST people won’t be willing to mix communities.”* However, there was not much will either from government officials or the landowners in redistributing the land, and the applicants were offered land elsewhere. Families were insistent on finding land in their area, which they felt was tied to the preservation of their community: *“Without land, our children could only have a home if they married outside of this area,”* as one woman shared. C22 planned on submitting a new application entirely, with the aim that this will prompt the newly appointed revenue division officer to close the old application. The officer could then try to convince the landowners that the land should go to the applicants, and to wait for upcoming government schemes that would prioritize land for them.

In the Indian context, there were multiple inroads into convincing other stakeholders regarding allocation of land, depending on their identity and position. In the US context, appeals may seem like a more structured process, with a hearing officer available to consider both the applicant’s and housing authority’s reasoning and review the original decision. However, similar to the Indian context, intermediaries account for social norms and incentives of the housing authority, and construct arguments and coach clients to work with those incentives in the appeals process.

Intermediaries, particularly lawyers, helped frame appeals in ways that were legible and acceptable to the housing authority. Applicants might have legal defenses such as reasonable accommodation [3] or protections from the Violence Against Women Act [4], which defend against issues of improper discretion by the housing authority. However, as B10 shared, *“They [applicants] haven’t framed it and they don’t know that there are actually some fairly good legal handles that other people can use,”* making connections to legal services important. Importantly, he also noted that even if applicants do present information that could support such a legal framing, the burden could be placed on them to go further: *“...they may not use terminology that prompts agencies to help. Even though it’s clear that agencies are not supposed to require magic language. You don’t have to say reasonable accommodation.”* Without legal representation, clients may end up ceding interpretation of their circumstances to the housing authority, which may not offer inquire further, whether that is due to lack of resources or political will. Additionally, as B11 shared, when applicants appeal a decision, they must consider the housing authority’s perspective and meet a certain standard of evidence that addresses the reason for denial. In another example of ceding interpretation to the housing authority, clients might *“...just go there and they say, gee, I’m really sorry, it won’t happen again,”* (B11). Whereas a lawyer’s approach might look more like sharing *“...our person is in treatment for anxiety and depression, and we will get them another assessment, and talk to their doctor about making changes to their medications... So these things don’t happen in the future, and that will be sufficient to get the housing authority to say, ‘okay’...”* (B11).

Intermediaries also coached clients for appeals. According to B11, establishing credibility was especially important in cases where a client is being terminated and their appeal relies on refuting the housing authority’s claims. According to him, *“...it’s not a fair presumption, but there may be this presumption that the housing authority has no stake in misrepresenting the facts, and the tenant does, because the tenant’s stake is the loss of their housing.”* Building this credibility entails educating clients about the housing authority’s perspective, how to refrain from outbursts and disagreements, and how to answer questions concisely. This was done with the intention of matching how *“lawyers and hearing officers are much more in the business of distilling things,”* (B11). B13, a hearing officer, acknowledged that legal representation can help keep a hearing on track, but she was also confident that she made decisions based on a legal basis, not interpersonal dynamics. However, B7 also explained how without coaching clients, she foresaw a number of issues for people that apply or appeal themselves, especially the most vulnerable: *“What about those families that apply by themselves... the client needs to [make claims] and make sure that she’s convinced of what she’s saying because clients with cognitive impairment don’t understand the question. They need to say yes, [but] they say no... You can prepare as much as you can, but when you go there in person, it’s different.”* We also heard from participants that even if there was no possible recourse, having an advocate was a matter of dignity. For B6, she ultimately understood that there was no legal defense for the particular reason her voucher was being terminated but she maintained that an advocate would have helped during an intimidating appeal: *“If I wouldn’t have left with the [voucher], I would’ve at least left with my dignity and my self worth.”*

4.3 Accompaniment as Escalating Forms of Contestation

Prior work discusses methods of scrutinizing algorithmic tools and decision-making processes, going beyond individual adverse outcomes [6, 51, 109]. While this work addresses how information and tools could theoretically support such scrutiny, we find that coordinating contestation of larger systems is a social process that should be supported as well. In this section, we describe how people navigate next steps after existing follow-up or appeals processes still result in adverse outcomes. We highlight accompaniment in how intermediaries lend legitimacy to and support collective forms of contestation. We especially bring attention to the importance of resources for intermediaries and strong community relationships.

4.3.1 Legitimacy through Knowledge and Social Standing. In both contexts, we see the power of accompaniment by legal advocates who are able to use their knowledge and positionality to bolster applicants’ pushback against unjust decisions. In the Indian context, filing a writ petition in the state’s high court could be used to force a decision from government officials on whether land is actually available. This method, facilitated by the fact that the NGO worked with a lawyer, was used once several follow-ups were deemed ineffective in getting a response. Exemplifying epistemic humility, C24 noted that escalation should only be building on prior community efforts. It is only in this case that *“100% they’ll support”* legal routes. C24 himself could also directly engage with actors in charge of provisioning resources like pattas and utilities, to use the power of potential court orders to spur action. In one case, families were allotted land in a village, but were still waiting on patta documents and functioning utilities. After the coordinators and their project manager’s follow-ups with the panchayat leader proved ineffective, C24 intervened, after which the panchayat leader immediately set up a water connection. According to C24, he was able to credibly suggest that he could petition the court or collector if the panchayat leader did not act.

In the US context, we saw applicants turn to legal advocates and other actors to support claims against unjust decision-making processes. In one case, B2 shared that her name had come up for a voucher twice, and both times, the housing authority informed her that they had never received a response to their request for updated information. In the second instance, B2, as a volunteer with legal services, began leveraging her connections with housing justice lawyers, as well as bringing in city council members and news channels, to bolster her case that this was unjust treatment. She felt that having legal services on her side was more convincing than her own attempts, demonstrating how accompaniment sometimes offers legitimacy:

“A lot of times, in the communities of color, people don’t value our voice... We can tell you, A) you can’t do this. B) you’re breaking the law. And it doesn’t matter. They say, what are you gonna do about it?... But when you have a voice of someone [lawyers] who holds a higher position or who can cause them some trouble, now they’re going to listen.”

In both contexts, dedicated resources were key—in the Indian context, the lawyer commits time to the community’s legal needs

via the NGO, while in the US context, there were legal services committed to housing and other social justice issues. However, resources for this work were limited. For example, in the US context, B14 noted that the dearth of legal services for housing in the area meant most organizations focused on keeping people in housing, with fewer dedicated to supporting people with denials.

4.3.2 Working with Community on Collective Action. In both contexts, we also see the importance of strong relationships amongst intermediaries and communities in coordinating collective contestation. In the Indian context, petitions did not always yield results. In these cases, the coordinators, as part of Scheduled Tribe communities, would organize community members for a sit-in at the collector's office. The hope was to garner media attention, as well as prompt higher level officials within the state to ask the district administration to resolve the issue. Notably, actors like the lawyer who were not part of the community would stay out of this process, indicating different forms of credibility in different tactics. Rather, tribal associations might be involved here, as they were practiced in taking an activist approach to community issues. In one illustrative case, a sit-in helped demonstrate the importance of making an exception to rules around benefits for widows. A woman's husband had disappeared and it was unclear if he had passed away, so there was no death certificate to provide for a widow card. The woman and a number of others in similar circumstances had been repeatedly denied by the collector, until they went as a group to demand the cards. According to C24, this garnered media attention and the collector provided the cards right away.

The relationships coordinators built with government officials could also pay off in unintended ways to escalate issues. In the case of the panchayat leader deprioritizing housing for one village, they found that advocating to government officials was not helpful. In the end, what helped was an image of the village that C22 posted on his WhatsApp status, mentioning how *"I work in this area, the houses are old, water gets into the houses when it rains, shouldn't the government help? Don't they have responsibility here?"* Such posts were not unusual for C22, but because C22 had the welfare officer's contact, the officer reached out.

Notably, these demonstrations in the Indian context were in support of more favorable decisions in particular instances for particular groups of people. It is an important question as to whether these exceptions then become integrated into policy, or if they remain exceptions, but it was clear to participants that the overall responsiveness of government officials to Scheduled Tribe communities was increasing due to coordinators' and applicants' engagement. In the US context, legal services played a key role in forms of advocacy that more formally changed the basis of decisions in housing. For example, B14 explained how housing authorities host public participation processes and legal service organizations are active leaders in them. In one example, advocates were able to shorten the lookback period for criminal records checks, in support of equitable access to housing for justice-involved individuals.

Strong relationships among community organizations and clients were also important for legal case-making. At the time of the study, B9 was building a case against the use of an algorithmic tenant screening tool by landlords, which was denying applicants in cases where there did not seem to be reason for it, such as when they had

vouchers. According to B9, getting plaintiffs for the case was *"not just a one-way street where oh, you're gonna be a good plaintiff"*—this process required coordinating with housing NGOs to reach out to people who had been denied by the tool and actually support them in addressing the denial. This is ultimately what enabled the investigative process of understanding why applicants were denied by the algorithm, testing what kind of applications would receive a positive versus negative outcome, and testing the responsiveness of landlords' and the screening company's appeals processes.

5 DISCUSSION

Across contexts, we found that accompaniment was crucial for understanding what makes contestation of decisions possible, addressing our first research question around how people navigate adverse outcomes in decision-making processes. We expand on prior work on the care work of mediating interactions with public services [71], grievance mechanisms [43], and algorithmic systems [83]. We find that transparency of information and processes is insufficient to go through with contestation; accompaniment helps applicants logistically and emotionally navigate public services and contestation, influence other stakeholders to achieve better outcomes, and escalate and coordinate collective forms of contestation.

In this section, we draw on our findings to address our second research question around how people might be better supported in navigating adverse outcomes in algorithmic decision-making processes. In particular, we discuss how our findings 1) complicate assumptions regarding contestability in the HCI, AI, and policy spheres and suggest areas for future work, and 2) present ways that the notion of accompaniment can be embedded into sociotechnical systems of algorithmic decision-making in public services, to both prevent denials and enable contestation.

5.1 Complicating Contestability in HCI, AI, and Policy

By highlighting accompaniment in the process of contestation, we see how contestation is not just something that happens at the point of receiving a decision, but a longer journey of building up capacity, navigating contestation processes, and turning to other tactics to address systemic issues with decision-making. We leverage these findings against assumptions made in the literature on contestability of algorithmic decision-making, suggesting shifts in how we might engage with the complexities of contestability.

5.1.1 Algorithmic Accountability. Prior work has called for a situated approach to algorithmic accountability premised on the idea that contestation and its effectiveness are shaped by sociopolitical contexts [51, 58], with significant differences across Western and non-Western settings [79]. Our findings point to how apprehensions around contestation do manifest across geographies, though in different ways depending on applicants' relationship to the state. We find that it is then important to cultivate both the motivation to contest and the safety of acting on that decision, if we seek to enable contestation. We found that in the Indian context, for example, communities felt strongly that they should be able to get pattas in certain areas, but there were still concerns about the power differentials between communities and the state, so collective methods

of contestation were useful here. In such a context, it may be important for algorithmic tools to help applicants and intermediaries understand who else has been denied or deprioritized (with information anonymized) and why, so that there is a basis for bringing up concerns within their communities and with decision-makers [6, 62]. In comparison, in the US context, we found that there were clients who did not want to appeal, while there were others who did but faced barriers in terms of legal knowledge and other resources. In this type of setting, enabling contestation may have more to do with raising awareness of rights related to appeals and connecting them to the end goal of achieving better outcomes. This builds on findings in prior work on toolkits for thinking about algorithmic equity [51]; in addition to AI literacy efforts, such toolkits may also need to tie into information about more fundamental rights and legal resources.

We also bring attention to the temporal and community-oriented nature of building capacity for contestation. We found that there was a range of attitudes towards contestation, and not all applicants were convinced of the importance, even after going through a successful appeals process. This suggests that it may be important to build on efforts towards critical awareness for the general population, as proposed in prior work [47, 79], to also find ways to better connect people to social and legal resources when they receive adverse outcomes. Actors beyond applicants and intermediaries may be important here as well, such as community associations or tenant unions in the context of housing. This is doubly beneficial as we also saw how such strong community relationships are what enable the social process of coordinating collective contestation, such as legal case-making. These relationships could also be important for scrutinizing the use of less obviously visible use of algorithms, such as in decision-support or organizational planning contexts.

5.1.2 Human Review. Policy documents have stated the importance of human review of algorithmic decisions [72], and HCI research finds that human review (as opposed to algorithmic review) provides the opportunity for dialogue and influence, assuming the interactions are conducted with dignity and compassion [61, 110]. We find that what enables applicants to go through contestation with dignity is non-trivial. Contestation in public services may be at odds with dignity, as some participants pointed out. Appeals can be a scrutinization of character, behavior, and deservingness, or government officials may be unresponsive or retaliatory. Designing a just review process then is a question of not just human versus algorithmic review, but also factors like whether applicants have access to advocates working in solidarity with them.

Designing a just review process may also be a question of what kind of support clients need in framing their appeal. For example, we saw how there was room for public service administrators to more actively and consistently help clients construct an appeal. We also note that the purpose of review was not always for contesting the substance of a decision. Follow-ups or appeals could be to ensure applications were still under consideration, or to better understand application requirements (in cases where this did not happen early on). In a context where algorithms are used, the latter presents a case where a review process should actually support learning goals. This suggests that the decision-making domain and prevalent reasons for denial may matter greatly when designing review processes.

5.1.3 Explanations. HCI and AI research have focused on numerous types of explanations to make decisions and systems more transparent and enable applicants to achieve different decisions [6, 57, 62, 109]. Our findings confirm that denials are often shaped by power dynamics stacked against marginalized communities, limiting the applicability of counterfactual explanations in the AI literature [48]. This reaffirms prior work advancing methods such as audits [25, 27, 90] and process-centric explanations [109] that enable contestation of the larger decision-making process. Still, our findings show that we can go beyond transparency of decisions and processes at the point of denial as well, since specialized knowledge such as legal defenses is sometimes necessary for appeals. Prior work discusses how there is room to expand the types of information algorithmic tools provide, in order to enable more actions [64]. Our findings emphasize the range of actions that tools could better support. Appeals, for example, can be a matter of reframing information, claiming to be an exception, or providing missing context for existing information. For explanations then, it may make sense to provide a related set of common defenses or helpful contextual information that people may use to build their argument for an appeal. Still, we emphasize that intermediaries also addressed apprehensions around contestation and emotionally supported applicants, indicating how equally important are sociotechnical interventions that provide social support for contestation processes.

Our findings draw attention to the amount of labor put into contestation. Intermediaries and applicants were already doing significant work to understand the intricacies of applying for housing, how decisions get made, and how to effectively appeal, in order to support clients and push back against the housing authority when needed—in cases where clients were not working with intermediaries, much of this work was on them. Our findings suggest then that the relationship between explanations and contestability needs to account for the possibly undue burden that may be placed on people contesting decisions or systems. For example, Kuo et al.'s work on decision-support in homeless services showed that connecting clients to resources without the support of the algorithm required significant advocacy, and that non-use of the algorithmic assessment was discouraged [60]. In the context of our study, we question how to ensure that designing for contestability does not make it harder to advocate for clients or push back against decision-makers, especially given that clients on their own may be more likely to be overlooked by public service administrators. For example, it may be important to investigate whether there are aspects of explanations or justifications, such as level of detail, that contribute to a lower likelihood of contestation. In the case of automated or semi-automated decisions, it may be important to provide guidance for human reviewers on how to evaluate applicants' appeals and whether algorithmic decisions and explanations should even be taken into account if they are being contested, taking care to avoid increasing the work of appeals.

5.2 Centering Accompaniment in Designing for Contestability

By highlighting accompaniment, we start from a point of acknowledging that inequities already exist in accessing benefits and engaging with the state—precisely why accompaniment is needed. By

taking such a perspective, our findings point out that we do not need to just think about outcome-oriented harms, as the literature on algorithmic recourse and contestability has expanded upon. We also need to consider process-oriented harm, which Saxena et al. and others describe as harms to the fairness of the decision-making process itself [36, 37, 86]. That is, our findings raise questions such as: Are applicants supported in submitting an application that is likely to be successful? Are discretionary policies around timelines or exceptional cases publicly posted? Are algorithmic systems relying on data that is appropriately updated, contextualized, and accessible, and if not, are there ways to provide that data before a denial? Following this line of questioning, we argue that sociotechnical systems must be able to embody accompaniment in their design and associated policies, which builds on prior work calling for safeguards such as adversarial decision-making procedures [6]. We share ideas on what this might look like, whether through non-technological or technological interventions.

One issue of embodying accompaniment is how to build awareness of and reduce barriers for people to engage with public services and appeals, which would become even more important with the introduction of algorithmic tools. We found that intermediaries' outreach was important for getting as much coverage as possible of affected communities using different strategies. An immediate way to support the outreach and support work of intermediaries is to offer more resources. Training more intermediaries and designing systems for making their work easier could help, as has been proposed for intermediaries in, for example, schooling [83]. Flexible templates or knowledge repositories that help encode best practices for following up on decisions or building arguments to contest decisions could be helpful in recording knowledge where it may be challenging to get from the state. This is especially true in the Indian context, where the roadmap to applying for and receiving pattas was highly opaque. Resources could also support greater community outreach. For example, legal clinics in the US context, and paralegal volunteer corps in the Indian context, could expand the reach of the specialized knowledge needed for contestation. In the design of algorithmic tools, we could also imagine a system that proactively asks applicants if an advocate should reach out to them. Reports of algorithmic tools in development programs emphasize the risk of underinvestment in support for appeals processes, especially when agencies have unwarranted trust in the accuracy of new tools [98], making these recommendations all the more important.

Another issue we saw is how to appropriately create opportunities for input and discretion, which allowed applicants to provide greater context about themselves before a final decision—a value that is often overlooked in algorithms in homeless services [91]. For example, the housing authority policy in the United States context used pre-denial letters to ensure that people had the opportunity to contextualize criminal record history. In the Indian context, though a number of denials had to happen first, beneficiaries were able to demand an exception to policies around widow cards. These cases inspire opportunities for design in the context of public services. For example, modeling after a pre-denial letter, algorithms could be designed to ask for more information if potential decisions are too close to the decision boundary, which is computationally different from designing counterfactual explanations. There could also

be more communication of policies around discretion in general—while it may seem that discretion is unforeseeable, it is important that others are made aware as exceptions are made. For example, if timelines can be extended or if exceptions to eligibility can be made in certain circumstances, those can be communicated proactively and even embedded into system design, without applicants needing to ask if they are possible.

Another question is whether policy and technology have a role to play in supporting the state in taking on a high burden of communication, proof, and redressal so that the burden of contestation is not placed entirely on the beneficiary. Prior work in legal advocacy has suggested best practices for housing authorities but which are applicable to public services more generally. Practices include making significant efforts to contact people with updates before consequences like removal from waitlists, or using hearings to help families, even those without legal representation, frame their stories in ways that uncover and support legal defenses (as mentioned above) [29]. In terms of communication, there may be opportunities for making it easier for public service administrators to reach out to people, including the ability to name an intermediary communicator such as a case manager, or combining written and digital forms of communication to try to ensure better coverage. For redress, if there is enough coordination in technological infrastructure across public services, denials could also be an opportunity to directly provide access to other benefits they are eligible for (while still emphasizing the right to appeal)—which findings in prior work have speculated could be a more supportive use of data-driven tools [60]. There certainly has to be political will for taking on such burden, and as the Indian context demonstrates, the hierarchy of government officials may need to be taken into account, for example by making it clear that such policies come from above and relying on “patching” [104] to ensure certain aspects of service delivery.

6 LIMITATIONS

We note again that we did not study contexts where algorithms are used, and acknowledge that the very introduction of algorithmic tools could shape behavior, relationships, and power dynamics that in turn could change how contestation plays out [47, 89]. We also note that contestability is only one aspect of responsible AI systems. Even as the development of various algorithmic decision-making tools in public services prompts us to consider how to support contestability, we emphasize the importance of designing for contestability particularly when other safeguards have been placed as well. For example, meaningful community input in ideation and design, opportunities to contest a tool's deployment, educating workers and decision subjects, and ensuring contestation actually improves or even ends use of the tool if necessary, would all be equally important. Amidst these caveats, we view contestability as an important avenue for aligning with communities' agency and civil liberties. In this paper, we have expanded notions of what contestability requires, with the aim that future research and design efforts can build on this understanding.

7 CONCLUSION

We conducted a multi-sited qualitative study on how people in rural South India and the urban Northeastern United States contest adverse decisions in public services for land ownership and housing. By highlighting the situated process of contestation for marginalized communities, we consider how research in HCI and AI could meet policy recommendations of accessible modes of contestation. Our findings indicate how transparent and actionable information about adverse decisions does not necessarily translate into contestation. Rather, intermediaries such as NGO workers, case managers, and lawyers work with applicants to do the care work of contestation. Accompaniment enables applicants to navigate inaccessible aspects of interfacing with public services, leverage specialized knowledge, navigate multiple stakeholders to work towards improved outcomes, and support collective contestation. We leverage these findings to emphasize how research in HCI and AI could better acknowledge inequities faced by marginalized communities and the labor of intermediaries. We also discuss how the design of public services that use algorithmic decision-making could support and embody accompaniment, providing concrete ways that the burden placed on marginalized communities to contest could be shared with not only intermediaries, but also public service administrators and algorithmic tools.

ACKNOWLEDGMENTS

We thank the participants who took the time to share about their perspectives and experiences, as well as the workers and organizations that facilitated recruitment. We also thank the anonymous reviewers whose feedback enriched this work. This work was supported in part by the National Science Foundation under Grant No. IIS-2107391. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. This work was also supported in part by the Center for Research on Computation and Society at the Harvard John A. Paulson School of Engineering and Applied Sciences.

REFERENCES

- [1] [n. d.]. About Right to Information Act 2005. <https://rti.gov.in/>
- [2] [n. d.]. Massachusetts profile. <https://www.prisonpolicy.org/profiles/MA.html>
- [3] [n. d.]. Reasonable Accommodations and Modifications. https://www.hud.gov/program_offices/fair_housing_equal_opp/reasonable_accommodations_and_modifications
- [4] [n. d.]. Violence Against Women Act. <https://nnedv.org/content/violence-against-women-act/>
- [5] 2018. General Data Protection Regulation. <https://gdpr.eu/>
- [6] Kars Alfrink, Ianus Keller, Gerd Kortuem, and Neelke Doorn. 2022. Contestable AI by Design: Towards a Framework. *Minds and Machines* (2022), 1–27.
- [7] Ali Alkhatib and Michael Bernstein. 2019. Street-level algorithms: A theory at the gaps between policy and decisions. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–13.
- [8] Marco Almada. 2019. Human intervention in automated decision-making: Toward the construction of contestable systems. In *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law*. 2–11.
- [9] Asbjørn Ammitzbøll Flügge, Thomas Hildebrandt, and Naja Holten Møller. 2021. Street-level algorithms and AI in bureaucratic decision-making: A caseworker perspective. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–23.
- [10] Sophie Andreetta. 2019. Writing for different audiences: social workers, irregular migrants and fragmented statehood in Belgian welfare bureaucracies. *Journal of Legal Anthropology* 3, 2 (2019), 91–110.
- [11] Urvashi Aneja and Dona Mathew. 2023. Smart Automation and Artificial Intelligence in India's Judicial System: A Case of Organised Irresponsibility.
- [12] World Bank. [n. d.]. Global Program for Resilient Housing. <https://www.worldbank.org/en/topic/disasterriskmanagement/brief/global-program-for-resilient-housing>
- [13] Emre Bayamlioğlu. 2022. The right to contest automated decisions under the General Data Protection Regulation: Beyond the so-called "right to explanation". *Regulation & Governance* 16, 4 (2022), 1058–1078.
- [14] Heidi L Behforouz, Paul E Farmer, and Joia S Mukherjee. 2004. From directly observed therapy to accompagnateurs: enhancing AIDS treatment outcomes in Haiti and in Boston. *Clinical Infectious Diseases* 38, Supplement_5 (2004), S429–S436.
- [15] Lisa Marie Borrelli. 2023. 'Do you understand? Yes, you understand.': Bureaucratic translations of difference during deportation talks in Switzerland. In *Policing race, ethnicity and culture*. Manchester University Press, 174–192.
- [16] Anna Brown, Alexandra Chouldechova, Emily Putnam-Hornstein, Andrew Tobin, and Rhema Vaithianathan. 2019. Toward algorithmic accountability in public services: A qualitative study of affected community perspectives on algorithmic decision-making in child welfare services. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–12.
- [17] Stefan Buijsman and Herman Veluwenkamp. 2022. Spotting when algorithms are wrong. *Minds and Machines* (2022), 1–22.
- [18] Molly Callahan. 2022. Greater Boston Housing Earns "Failing Grade" in Annual Report Card. <https://www.bu.edu/articles/2022/greater-boston-housing-earns-failing-grade-in-annual-report/>
- [19] Sarah H Cen. 2022. The Right to be an Exception in Data-Driven Decision-Making. In *Ethical Issues in Computing & AI Conference*, Vol. 3.
- [20] Priyank Chandra and Joyjeet Pal. 2019. Rumors and collective sensemaking: Managing ambiguity in an informal marketplace. In *Proceedings of the 2019 chi conference on human factors in computing systems*. 1–12.
- [21] Hao-Fei Cheng, Logan Stapleton, Anna Kawakami, Venkatesh Sivaraman, Yanghui Cheng, Diana Qing, Adam Perer, Kenneth Holstein, Zhiwei Steven Wu, and Haiyi Zhu. 2022. How child welfare workers reduce racial disparities in algorithmic decisions. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–22.
- [22] CHIWOR Collective, Naveena Karusala, Nabil Al Nahin Ch, Diana Tosca, Alberta A Ansah, Emeline Brulé, Nadia Fereydooni, Le-En Huang, Azra Ismail, Pranjali Jain, et al. 2022. Human-Computer Interaction and the Future of Work. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*. 1–3.
- [23] Jenny L Davis, Apryl Williams, and Michael W Yang. 2021. Algorithmic reparation. *Big Data & Society* 8, 2 (2021), 20539517211044808.
- [24] Maria De-Arteaga, Riccardo Fogliato, and Alexandra Chouldechova. 2020. A case for humans-in-the-loop: Decisions in the presence of erroneous algorithmic scores. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–12.
- [25] Wesley Hanwen Deng, Boyuan Guo, Alicia Devrio, Hong Shen, Motahhare Eslami, and Kenneth Holstein. 2023. Understanding Practices, Challenges, and Opportunities for User-Engaged Algorithm Auditing in Industry Practice. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–18.
- [26] Jack Denton. 2019. Will Algorithmic Tools Help or Harm the Homeless? <https://psmag.com/social-justice/will-algorithmic-tools-help-or-harm-the-homeless>
- [27] Alicia DeVos, Aditi Dhabalia, Hong Shen, Kenneth Holstein, and Motahhare Eslami. 2022. Toward User-Driven Algorithm Auditing: Investigating users' strategies for uncovering harmful algorithmic behavior. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–19.
- [28] Rita Kaur Dhamoon. 2011. Considerations on mainstreaming intersectionality. *Political Research Quarterly* 64, 1 (2011), 230–243.
- [29] Eric Dunn, Ashley Fluhrer Greenberg, and Anisha Sundarraj. 2008. Housing Choice Voucher Termination Hearings-Best Practices for Public Housing Agencies. *Clearinghouse Rev* 42 (2008), 134.
- [30] Paul Farmer. 2011. Accompaniment as Policy. (2011). <https://www.lessonsfromhaiti.org/press-and-media/transcripts/accompaniment-as-policy/>
- [31] Molly F Franke, Felix Kaigamba, Adrienne R Succi, Massudi Hakizamungu, Anita Patel, Emmanuel Bagiruwigize, Peter Niyigena, Kelly DC Walker, Henry Epino, Agnes Binagwaho, et al. 2013. Improved retention associated with community-based accompaniment for antiretroviral therapy delivery in rural Rwanda. *Clinical Infectious Diseases* 56, 9 (2013), 1319–1326.
- [32] Maya Indra Ganesh and Emanuel Moss. 2022. Resistance and refusal to algorithmic harms: Varieties of 'knowledge projects'. *Media International Australia* 183, 1 (2022), 90–106.
- [33] Marissa Gerchick, Tobi Jegede, Tarak Shah, Ana Gutierrez, Sophie Beiers, Noam Shemtov, Kath Xu, Anjana Samant, and Aaron Horowitz. 2023. The Devil is in the Details: Interrogating Values Embedded in the Allegheny Family Screening Tool. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency*. 1292–1310.
- [34] Nick Gill, Nicole Hoellerer, Jennifer Allsopp, Andrew Burrige, Dan Fisher, Melanie Griffiths, Jessica Hambly, Natalia Paszkiewicz, Rebecca Rotter, and Lorenzo Vianelli. 2022. Rethinking commonality in refugee status determination

- in Europe: Legal geographies of asylum appeals. *Political Geography* 98 (2022), 102686.
- [35] Ben Green. 2022. The flaws of policies requiring human oversight of government algorithms. *Computer Law & Security Review* 45 (2022), 105681.
- [36] Nina Grgić-Hlača, Muhammad Bilal Zafar, Krishna P Gummadi, and Adrian Weller. 2018. Beyond distributive fairness in algorithmic decision making: Feature selection for procedurally fair learning. In *Proceedings of the AAAI Conference on Artificial Intelligence*, Vol. 32.
- [37] Luke Guerdan, Amanda Coston, Zhiwei Steven Wu, and Kenneth Holstein. 2023. Ground (less) Truth: A Causal Framework for Proxy Labels in Human-Algorithmic Decision-Making. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency*. 688–704.
- [38] Jessica Hambly and Nick Gill. 2020. Law and speed: Asylum appeals and the techniques and consequences of legal quickening. *Journal of law and society* 47, 1 (2020), 3–28.
- [39] Tad Hirsch, Kritzia Merced, Shrikanth Narayanan, Zac E Imel, and David C Atkins. 2017. Designing contestability: Interaction design, machine learning, and mental health. In *Proceedings of the 2017 Conference on Designing Interactive Systems*. 95–99.
- [40] Isaac Holeman and Dianna Kane. 2020. Human-centered design for global health equity. *Information technology for development* 26, 3 (2020), 477–505.
- [41] Naja Holten Møller, Irina Shklovski, and Thomas T Hildebrandt. 2020. Shifting concepts of value: Designing algorithmic decision-support systems for public services. In *Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society*. 1–12.
- [42] Naja L Holten Møller, Geraldine Fitzpatrick, and Christopher A Le Dantec. 2019. Assembling the Case: Citizens' Strategies for Exercising Authority and Personal Autonomy in Social Welfare. *Proceedings of the ACM on human-computer interaction* 3, GROUP (2019), 1–21.
- [43] Naomi Hossain, Anuradha Joshi, and Suchi Pande. 2023. The politics of complaint: a review of the literature on grievance redress mechanisms in the global South. *Policy Studies* (2023), 1–20.
- [44] Azra Ismail and Neha Kumar. 2021. AI in global health: the view from the front lines. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–21.
- [45] Azra Ismail, Divy Thakkar, Neha Madhiwalla, and Neha Kumar. 2023. Public Health Calls for/with AI: An Ethnographic Perspective. *Proceedings of the ACM on Human-Computer Interaction* 7, CSCW2 (2023), 1–26.
- [46] Azra Ismail, Deepika Yadav, Meghna Gupta, Kirti Dabas, Pushpendra Singh, and Neha Kumar. 2022. Imagining Caring Futures for Frontline Health Work. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–30.
- [47] Shivani Kapania, Oliver Siy, Gabe Clapper, Azhagu Meena SP, and Nithya Sambasivan. 2022. "Because AI is 100% right and safe": User attitudes and sources of AI authority in India. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–18.
- [48] Amir-Hossein Karimi, Gilles Barthe, Bernhard Schölkopf, and Isabel Valera. 2022. A survey of algorithmic recourse: contrastive explanations and consequential recommendations. *Comput. Surveys* 55, 5 (2022), 1–29.
- [49] Naveena Karusala, Azra Ismail, Karthik S Bhat, Aakash Gautam, Sachin R Pendse, Neha Kumar, Richard Anderson, Madeline Balaam, Shaowen Bardzell, Nicola J Bidwell, et al. 2021. The future of care work: towards a radical politics of care in CSCW research and practice. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing*. 338–342.
- [50] Naveena Karusala, Jennifer Wilson, Phebe Vayanos, and Eric Rice. 2019. Street-level realities of data practices in homeless services provision. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–23.
- [51] Michael Katell, Meg Young, Dharma Dailey, Bernease Herman, Vivian Guetler, Aaron Tam, Corinne Bintz, Daniella Raz, and PM Krafft. 2020. Toward situated interventions for algorithmic equity: lessons from the field. In *Proceedings of the 2020 conference on fairness, accountability, and transparency*. 45–55.
- [52] Anna Kawakami, Venkatesh Sivaraman, Hao-Fei Cheng, Logan Stapleton, Yanghui Cheng, Diana Qing, Adam Perer, Zhiwei Steven Wu, Haiyi Zhu, and Kenneth Holstein. 2022. Improving human-AI partnerships in child welfare: understanding worker practices, challenges, and desires for algorithmic decision support. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–18.
- [53] Anna Kawakami, Venkatesh Sivaraman, Logan Stapleton, Hao-Fei Cheng, Adam Perer, Zhiwei Steven Wu, Haiyi Zhu, and Kenneth Holstein. 2022. "Why Do I Care What's Similar?" Probing Challenges in AI-Assisted Child Welfare Decision-Making through Worker-AI Interface Design Concepts. In *Designing Interactive Systems Conference*. 454–470.
- [54] Mark T Keane, Eoin M Kenny, Eoin Delaney, and Barry Smyth. 2021. If only we had better counterfactual explanations: Five key deficits to rectify in the evaluation of counterfactual xai techniques. *arXiv preprint arXiv:2103.01035* (2021).
- [55] Jakko Kemper and Daan Kolkman. 2019. Transparent to whom? No algorithmic accountability without a critical audience. *Information, Communication & Society* 22, 14 (2019), 2081–2096.
- [56] Vanessa Kerry, Agnes Binagwaho, Jonathan Weigel, and Paul Farmer. 2014. From aid to accompaniment: rules of the road for development assistance. *The handbook of global health policy* (2014), 483–504.
- [57] Daniel N Kluttz, Nitin Kohli, and Deirdre K Mulligan. 2022. Shaping our tools: Contestability as a means to promote responsible algorithmic decision making in the professions. *Ethics of Data and Analytics. Auerbach Publications* (2022), 420–428.
- [58] PM Krafft, Meg Young, Michael Katell, Jennifer E Lee, Shankar Narayan, Micah Epstein, Dharma Dailey, Bernease Herman, Aaron Tam, Vivian Guetler, et al. 2021. An action-oriented AI policy toolkit for technology audits by community advocates and activists. In *Proceedings of the 2021 ACM conference on fairness, accountability, and transparency*. 772–781.
- [59] Neha Kumar, Naveena Karusala, Azra Ismail, Marisol Wong-Villares, and Aditya Vishwanath. 2019. Engaging feminist solidarity for comparative research, design, and practice. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–24.
- [60] Tzu-Sheng Kuo, Hong Shen, Jisoo Geum, Nev Jones, Jason I Hong, Haiyi Zhu, and Kenneth Holstein. 2023. Understanding Frontline Workers' and Unhoused Individuals' Perspectives on AI Used in Homeless Services. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–17.
- [61] Henrietta Lyons, Tim Miller, and Eduardo Velloso. 2023. Algorithmic Decisions, Desire for Control, and the Preference for Human Review over Algorithmic Review. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency*. 764–774.
- [62] Henrietta Lyons, Eduardo Velloso, and Tim Miller. 2021. Conceptualising contestability: Perspectives on contesting algorithmic decisions. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–25.
- [63] Henrietta Lyons, Senuri Wijenayake, Tim Miller, and Eduardo Velloso. 2022. What's the appeal? Perceptions of review processes for algorithmic decisions. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–15.
- [64] Gennie Mansi and Mark Riedl. 2023. Why Don't You Do Something About It? Outlining Connections between AI Explanations and User Actions. *arXiv preprint arXiv:2305.06297* (2023).
- [65] Amelie Marian. 2023. Algorithmic Transparency and Accountability through Crowdsourcing: A Study of the NYC School Admission Lottery. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency*. 434–443.
- [66] Sharan B Merriam et al. 2002. Introduction to qualitative research. *Qualitative research in practice: Examples for discussion and analysis* 1, 1 (2002), 1–17.
- [67] Jacob Metcalf, Ranjit Singh, Emanuel Moss, Emnet Tafesse, and Elizabeth Anne Watkins. 2023. Taking Algorithms to Courts: A Relational Approach to Algorithmic Accountability. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency*. 1450–1462.
- [68] Anna P Meyer, Dan Ley, Suraj Srinivas, and Himabindu Lakkaraju. 2023. On Minimizing the Impact of Dataset Shifts on Actionable Explanations. *arXiv preprint arXiv:2306.06716* (2023).
- [69] Shakir Mohamed, Marie-Therese Png, and William Isaac. 2020. Decolonial AI: Decolonial theory as sociotechnical foresight in artificial intelligence. *Philosophy & Technology* 33 (2020), 659–684.
- [70] Chandra Talpade Mohanty. 2003. "Under western eyes" revisited: Feminist solidarity through anticapitalist struggles. *Signs: Journal of Women in culture and Society* 28, 2 (2003), 499–535.
- [71] Trine Rask Nielsen, Maria Menendez-Blanco, and Naja Holten Møller. 2023. Who Cares About Data? Ambivalence, Translation, and Attention in Asylum Casework. *Computer Supported Cooperative Work (CSCW)* (2023), 1–50.
- [72] Office of Science and Technology Policy. 2023. Blueprint for an AI Bill of Rights.
- [73] Chinasa T Okolo, Srujana Kamath, Nicola Dell, and Aditya Vashistha. 2021. "It cannot do all of my work": community health worker perceptions of AI-enabled mobile health applications in rural India. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–20.
- [74] Pittsburgh Task Force on Public Algorithms. 2020. Report of the Pittsburgh Task Force on Public Algorithms. https://www.cyber.pitt.edu/sites/default/files/pittsburgh_task_force_on_public_algorithms_report.pdf
- [75] Juho Pääkkönen, Matti Nelimarkka, Jesse Haapoja, and Airi Lampinen. 2020. Bureaucracy as a lens for analyzing and designing algorithmic systems. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–14.
- [76] Joyojeet Pal, Priyank Chandra, Vaishnav Kameswaran, Aakanksha Parameshwar, Sneha Joshi, and Aditya Johri. 2018. Digital payment and its discontents: Street shops and the Indian government's push for cashless transactions. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–13.
- [77] Rafael Poyiadzi, Kacper Sokol, Raul Santos-Rodriguez, Tjil De Bie, and Peter Flach. 2020. FACE: feasible and actionable counterfactual explanations. In *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society*. 344–350.
- [78] Inioluwa Deborah Raji and Joy Buolamwini. 2019. Actionable auditing: Investigating the impact of publicly naming biased performance results of commercial ai products. In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society*. 429–435.

- [79] Divya Ramesh, Vaishnav Kameswaran, Ding Wang, and Nithya Sambasivan. 2022. How platform-user power relations shape algorithmic accountability: A case study of instant loan platforms and financially stressed users in India. In *Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*. 1917–1928.
- [80] Eric Reinhart. 2021. Medicine for the People. (2021). <https://www.bostonreview.net/articles/eric-reinhart-accompaniment-and-medicine/>
- [81] Samantha Robertson, Tonya Nguyen, Cathy Hu, Catherine Albiston, Afshin Nikzad, and Niloufar Salehi. 2023. Expressiveness, Cost, and Collectivism: How the Design of Preference Languages Shapes Participation in Algorithmic Decision-Making. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–16.
- [82] Samantha Robertson, Tonya Nguyen, and Niloufar Salehi. 2021. Modeling assumptions clash with the real world: Transparency, equity, and community challenges for student assignment algorithms. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–14.
- [83] Samantha Robertson, Tonya Nguyen, and Niloufar Salehi. 2022. Not Another School Resource Map: Meeting Underserved Families' Information Needs Requires Trusting Relationships and Personalized Care. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–23.
- [84] Devansh Saxena, Karla Badillo-Urquiola, Pamela J Wisniewski, and Shion Guha. 2020. A human-centered review of algorithms used within the US child welfare system. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–15.
- [85] Devansh Saxena, Karla Badillo-Urquiola, Pamela J Wisniewski, and Shion Guha. 2021. A framework of high-stakes algorithmic decision-making for the public sector developed through a case study of child-welfare. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW2 (2021), 1–41.
- [86] Devansh Saxena and Shion Guha. 2023. Algorithmic Harms in Child Welfare: Uncertainties in Practice, Organization, and Street-level Decision-Making. *ACM J. Responsib. Comput.* (sep 2023). <https://doi.org/10.1145/3616473> Just Accepted.
- [87] Devansh Saxena, Erina Seh-Young Moon, Aryan Chaurasia, Yixin Guan, and Shion Guha. 2023. Rethinking "Risk" in Algorithmic Systems Through A Computational Narrative Analysis of Casenotes in Child-Welfare. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–19.
- [88] Devansh Saxena, Seh Young Moon, Dahlia Shehata, and Shion Guha. 2022. Unpacking invisible work practices, constraints, and latent power relationships in child welfare through casenote analysis. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–22.
- [89] Andrew D Selbst, Danah Boyd, Sorelle A Friedler, Suresh Venkatasubramanian, and Janet Vertesi. 2019. Fairness and abstraction in sociotechnical systems. In *Proceedings of the conference on fairness, accountability, and transparency*. 59–68.
- [90] Hong Shen, Alicia DeVos, Motahhare Eslami, and Kenneth Holstein. 2021. Everyday algorithm auditing: Understanding the power of everyday users in surfacing harmful algorithmic behaviors. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW2 (2021), 1–29.
- [91] Dilruba Showkat, Angela DR Smith, Wang Lingqing, and Alexandra To. 2023. "Who is the right homeless client?": Values in Algorithmic Homelessness Service Provision and Machine Learning Research. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–21.
- [92] Ranjit Singh and Steven Jackson. 2021. Seeing like an infrastructure: Low-resolution citizens and the Aadhaar identification project. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW2 (2021), 1–26.
- [93] Ranjit Singh and Steven J Jackson. 2017. From margins to seams: Imbrication, inclusion, and torque in the Aadhaar Identification Project. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 4776–4824.
- [94] Rohit Singh and Tanay Mahindru. 2021. #AIForAll Approach Document for India Part 1: Principles for Responsible AI.
- [95] Ronal Singh, Tim Miller, Henrietta Lyons, Liz Sonenberg, Eduardo Velloso, Frank Vetere, Piers Howe, and Paul Dourish. 2023. Directive explanations for actionable explainability in machine learning applications. *ACM Transactions on Interactive Intelligent Systems* (2023).
- [96] Wonyoung So, Pranay Lohia, Rakesh Pimplikar, AE Hosoi, and Catherine D'Ignazio. 2022. Beyond Fairness: Reparative Algorithms to Address Historical Injustices of Housing Discrimination in the US. In *Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*. 988–1004.
- [97] Logan Stapleton, Min Hun Lee, Diana Qing, Marya Wright, Alexandra Chouldechova, Ken Holstein, Zhiwei Steven Wu, and Haiyi Zhu. 2022. Imagining new futures beyond predictive systems in child welfare: A qualitative study with impacted stakeholders. In *Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*. 1162–1177.
- [98] Brian Stauffer. 2023. Automated Neglect: How The World Bank's Push to Allocate Cash Assistance Using Algorithms Threatens Rights.
- [99] Yuling Sun, Xiaojuan Ma, Silvia Lindtner, and Liang He. 2023. Data Work of Frontline Care Workers: Practices, Problems, and Opportunities in the Context of Data-Driven Long-Term Care. *Proceedings of the ACM on Human-Computer Interaction* 7, CSCW1 (2023), 1–28.
- [100] Divy Thakkar, Azra Ismail, Pratyush Kumar, Alex Hanna, Nithya Sambasivan, and Neha Kumar. 2022. When is machine learning data good?: Valuing in public health datafication. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–16.
- [101] Caitlin Thompson. 2021. Who's homeless enough for housing? In San Francisco, an algorithm decides. <https://www.codastory.com/authoritarian-tech/san-francisco-homeless-algorithm/>
- [102] Berk Ustun, Alexander Spangher, and Yang Liu. 2019. Actionable recourse in linear classification. In *Proceedings of the conference on fairness, accountability, and transparency*. 10–19.
- [103] Briana Vecchione, Karen Levy, and Solon Barocas. 2021. Algorithmic auditing and social justice: Lessons from the history of audit studies. In *Equity and Access in Algorithms, Mechanisms, and Optimization*. 1–9.
- [104] Rajesh Veerarahavan. 2021. Cat and Mouse Game: Patching Bureaucratic Work Relations by Patching Technologies. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–21.
- [105] Sahil Verma, Varich Boonsanong, Minh Hoang, Keegan E Hines, John P Dickerson, and Chirag Shah. 2020. Counterfactual explanations and algorithmic recourse for machine learning: A review. *arXiv preprint arXiv:2010.10596* (2020).
- [106] Sandra Wachter, Brent Mittelstadt, and Chris Russell. 2017. Counterfactual explanations without opening the black box: Automated decisions and the GDPR. *Harv. JL & Tech.* 31 (2017), 841.
- [107] Namita Wahi and Ankit Bhatia. 2018. The Legal Regime and Political Economy of Land Rights of Scheduled Tribes in Scheduled Areas of India. Available at SSRN 3759219 (2018).
- [108] Zijie J Wang, Jennifer Wortman Vaughan, Rich Caruana, and Duen Horng Chau. 2023. GAM Coach: Towards Interactive and User-centered Algorithmic Recourse. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–20.
- [109] Mireia Yurrita, Agathe Balayn, and Ujwal Gadiraju. 2023. Generating Process-Centric Explanations to Enable Contestability in Algorithmic Decision-Making: Challenges and Opportunities. *arXiv preprint arXiv:2305.00739* (2023).
- [110] Mireia Yurrita, Tim Draws, Agathe Balayn, Dave Murray-Rust, Nava Tintarev, and Alessandro Bozzon. 2023. Disentangling Fairness Perceptions in Algorithmic Decision-Making: the Effects of Explanations, Human Oversight, and Contestability. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–21.