

# Leaving No One Behind: Sociotechnical AI Governance for People with Disabilities in Humanitarian Crises

**Tigmanshu Bhatnagar**  
University College London  
London, United Kingdom  
t.bhatnagar@ucl.ac.uk

## ABSTRACT

Humanitarian crises disproportionately impact disabled people, who often face greater barriers to evacuation, healthcare, and essential services. AI systems used in disaster response frequently overlook their needs. While challenges such as data privacy, representation, power imbalances, and resource constraints are well-documented in AI ethics, they manifest in distinct ways for disabled populations who are often invisible in datasets, excluded from design processes, and vulnerable to harm from opaque decision-making systems. This position paper examines these governance challenges through a disability justice-driven sociotechnical lens and proposes actionable, HCI-informed interventions: data visibility, offline-capable innovative governance toolkits, and participatory oversight. Rather than proposing new governance principles, we demonstrate how existing frameworks can be adapted to humanitarian contexts with attention to disability justice. We invite workshop participants to discuss and refine these ideas, working toward inclusive AI governance that protects the rights and dignity of disabled communities in times of crisis.

## Author Keywords

Disability Justice, Humanitarian Practice, AI, Data, Governance

## INTRODUCTION

Humanitarian crises disproportionately affect people with disabilities, who face greater barriers to evacuation, healthcare, and basic services [16]. While AI and data-driven systems can enable faster, more targeted, and efficient humanitarian responses, their deployment must not leave vulnerable groups behind, creating significant governance challenges related to equity, privacy, political misuse, and bias [1]. AI solutions for disaster management range from early warning systems [7] to real-time rescue coordination [9], but these tools often overlook or underrepresent people with disabilities [2]. Inclusive design is seldom or inadequately incorporated into data collection and AI development, resulting in biased models that fail to reflect the complex realities of disabled individuals and other vulnerable communities. Despite global frameworks like the UN Convention on the Rights of Persons with Disabilities (UNCRPD) [17] and the Sendai Framework for Disaster Risk Reduction [14], inclusive data practices remain rare in field operations. When disability is treated as an afterthought, humanitarian AI systems can entrench invisibility or even exacerbate exclusion especially when

sensitive data (e.g., medical records or geolocation) is repurposed for non-humanitarian aims.

Effectively governing AI systems in crisis requires an inclusive sociotechnical lens that acknowledges that technical features such as data collection, model architectures, machine learning and social factors of power dynamics, disability cultures, societal norms and beliefs and the lived experiences of marginalised groups are deeply interwoven in practical action. HCI has a critical role to play in operationalising this vision through genuine participatory design and usable governance tools that are responsive to local realities. In particular, we argue that people with disabilities must be co-creators, not just subjects, in the design, oversight, and evaluation of systems that affect them.

This position paper contributes to the emerging conversation on inclusive AI governance by highlighting four recurring governance challenges of data ethics, representation, decision-making power, and resource limitations as they manifest in disability-specific humanitarian contexts. We propose a set of practical, HCI-informed interventions and invite the workshop community to refine and build upon these ideas. Our goal is to support context-aware, inclusive governance that does not trade urgency for equity, neutrality, impartiality and independence and instead ensures that AI enhances, rather than undermines, the dignity and rights of disabled people during crises.

## BACKGROUND

International humanitarian frameworks such as the International Humanitarian Law [8], Sendai Framework for Disaster Risk Reduction [14] and the Sphere Standards [15] emphasise that responses must include marginalised communities, including persons with disabilities. The UNCRPD [17] reaffirms states' obligations to ensure equal protection and assistance in risk and humanitarian emergencies. Despite these commitments, operationalising inclusive humanitarian practices remains a challenge even in developed and high-income contexts. Disasters such as Hurricanes Katrina and Rita exposed deep systemic failures in how emergency responses account for disability. People with disabilities were more likely to be left behind during evacuations, stranded in inaccessible shelters, and excluded from recovery processes [18]. Similarly, following Hurricane Sandy, a federal court ruled that the City of New York violated the rights of its disabled residents by failing to incorporate accessibility and accommodation into its

emergency planning [5]. These cases demonstrate that existing humanitarian systems often lack the tools, data practices, and institutional incentives to include people with disabilities from the outset. When inclusion is an afterthought, it makes rescue difficult, reactive and inconsistent.

Humanitarian data systems can exacerbate these inequities leading to multiple layers of exclusion for disabled people: inaccessible data collection processes, non-disaggregated data categories, and algorithmic tools that treat them as statistical outliers, invisible or noise. In such systems, technical governance becomes inseparable from questions of power, trust, and control [10,11,19]. This is where a sociotechnical approach becomes essential. Rather than treating technical systems and social contexts as separate domains, sociotechnical governance recognises that algorithms, datasets, and platforms are embedded in networks of norms, power, and practice [4,20]. A disability justice framework brings these entanglements into sharper focus. Disability Justice insists that access and inclusion alone are not enough [6]. It asks who is made vulnerable, who is deemed disposable, and who has the power to define which lives are worth saving, protecting, or documenting. Existing AI governance frameworks rarely address these nuances. While they invoke inclusivity as a technical guiding principle, they lack practical guidance on how to incorporate disabled communities into data infrastructures, algorithmic design, and institutional decision-making [3,13]. Nor do they account for the complex entanglements of ableism, austerity, and digital extraction that often shape crisis settings [12].

Applying disability justice in humanitarian AI governance means recognising that marginalisation is not a side effect but a design feature of many systems. It demands a reorientation of goals from optimising efficiency to affirming dignity; from managing populations to enabling agency; and from merely avoiding harm to actively redistributing decision-making power. It is within this reorientation that HCI can play a transformative role by fostering new practices of participation, accountability, and collective care in the design of humanitarian technologies.

### **SOCIOTECHNICAL GOVERNANCE**

At the nexus of AI governance, disability inclusion, and humanitarian action, we contribute the four sociotechnical challenges for consideration at the workshop and speculate on HCI interventions that can assist in addressing them.

#### **Data Justice and Visibility**

Disability-specific data is vital for equitable response, yet it is often missing, misclassified, or collected without consent leaving disabled people invisible or at risk. Crisis data practices may prioritise speed over care, treating disabled people as burdens or statistical anomalies. Many people face consent barriers due to language, cognitive, or communication differences, while being labelled as disabled can lead to stigma or exclusion from aid. HCI has a critical role in reshaping these dynamics by co-designing inclusive,

trust-based data governance tools. Mobile interfaces with multimodal inputs, DPO-led control over descriptors and participatory data practices can shift power back to those most affected. At the same time, rather than treating disability as a data point to secure, HCI must support communities in defining what data is collected, why, and for whom. Disability justice demands that visibility never come at the cost of autonomy or safety.

#### **Politics of Representation**

AI systems are often trained on incomplete or biased data that either omits disability or reduces it to reductive categories such as “*vulnerable*” or “*medically dependent*.” This results in algorithmic erasure, where disabled people’s needs and rights are misrepresented or ignored entirely. From a disability justice perspective, representation goes beyond inclusion; it involves confronting ableist assumptions embedded in data models and system goals. Systems that prioritise speed or mobility often marginalise those with impairments by design. HCI can counter this by developing tools that highlight who is missing from datasets, integrating counterfactual examples co-created with disabled users, and creating dashboards that encourage interpretation over blind reliance on AI-driven outputs. Model interpretability should centre inclusive values like interdependence and accessibility to reconfigure systems toward structural visibility and accountability, led by those historically marginalised or erased.

#### **Power, Participation and Decision-Making**

In humanitarian AI governance, key decisions around data, deployment, and ethics are still controlled by powerful institutions, UN, governments, influential NGOs and international humanitarian organisations, and private tech firms with little input from affected communities [5,15,17]. For disabled people, this exclusion is compounded by accessibility barriers and ableist norms that prevent genuine disability leadership. Disability justice demands a shift from tokenistic consultation to power redistribution, ensuring disabled people and their organisations shape agendas, assess risks, and co-design systems. HCI can support this shift by convening community-led data forums, designing accessible deliberation platforms (e.g., sign language, easy-read formats), and piloting governance sandboxes to test accountability mechanisms with disabled leadership. Crucially, HCI needs to commit to long-term, participatory research relationships rather than one-off engagements, correcting systemic exclusion and building governance structures led by those most impacted.

#### **Resource Constraints and Innovation**

Humanitarian organisations often work under intense constraints with limited funding, high staff turnover, and unstable infrastructure. These challenges are frequently used to justify the exclusion of disabled people, as if inclusion were only feasible under ideal conditions. Disability justice rejects this notion, asserting that access must be foundational, not optional. Inclusive governance hence, can be frugal and resilient without being minimal and HCI can

support this by developing modular, low-tech toolkits that help field teams make ethical decisions in real time, even offline. Platforms like KoBo Toolbox [25] and Open Data Kit [26] already support encrypted offline data collection in low-resource environments. When formal training is inconsistent, mobile-friendly onboarding tools and accessible checklists can embed inclusion into daily workflows. Lessons from telemedicine such as offline patient records [1] and portable diagnostics [7] show how frugal innovation can scale and HCI amplify such strategies, demonstrating that inclusion improves and not delay response.

## CONCLUSION

This paper has examined the governance challenges that arise when AI systems are deployed in humanitarian crises especially for communities historically excluded from both data systems and governance structures. Drawing from disability justice, we have reframed these challenges as matters not just of ethics or efficiency, but of power, accountability, and structural visibility. We call for a sociotechnical approach to AI governance that centres disabled people not as vulnerable recipients, but as leaders, co-designers, and equal decision-makers.

We invite the HCI and humanitarian communities to move beyond high-level frameworks toward grounded, justice-oriented collaborations supported by HCI. This means investing in long-term partnerships with disability-led organisations, co-designing tools that respond to real-world constraints, and creating governance models that can be tested, adapted, and scaled. AI in crisis settings should not reinforce inequality but it provides opportunities for innovating in being accountable to those most affected.

## REFERENCES

- [1] Eric Adu-Gyamfi. 2022. Frugal Digital Innovation for Health Information Systems in Resource-Constrained Settings: The Case of Sierra Leone. Retrieved March 4, 2025 from <https://www.duo.uio.no/handle/10852/94588>
- [2] Ana Beduschi. 2022. Harnessing the potential of artificial intelligence for humanitarian action: Opportunities and risks. *International Review of the Red Cross* 104, 919: 1149–1169. <https://doi.org/10.1017/S1816383122000261>
- [3] John Bryant. 2022. Digital technologies and inclusion in humanitarian response. *ODI: Think change*. Retrieved March 4, 2025 from <https://odi.org/en/publications/digital-technologies-and-inclusion-in-humanitarian-response/>
- [4] Gaelle Cachat-Rosset and Alain and Klarsfeld. 2023. Diversity, Equity, and Inclusion in Artificial Intelligence: An Evaluation of Guidelines. *Applied Artificial Intelligence* 37, 1: 2176618. <https://doi.org/10.1080/08839514.2023.2176618>
- [5] Giulio Coppi, Rebeca Moreno Jimenez, and Sofia Kyriazi. 2021. Explicability of humanitarian AI: a matter of principles. *Journal of International Humanitarian Action* 6, 1: 19. <https://doi.org/10.1186/s41018-021-00096-6>
- [6] Mateusz Dolata, Stefan Feuerriegel, and Gerhard Schwabe. 2021. A Sociotechnical View of Algorithmic Fairness. <https://doi.org/10.48550/arXiv.2110.09253>
- [7] Abid Haleem, Mohd Javaid, Ravi Pratap Singh, and Rajiv Suman. 2021. Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors International* 2: 100117. <https://doi.org/10.1016/j.sintl.2021.100117>
- [8] Amal Harrati, Sarah Bardin, and David R. Mann. 2023. Spatial distributions in disaster risk vulnerability for people with disabilities in the U.S. *International Journal of Disaster Risk Reduction* 87: 103571. <https://doi.org/10.1016/j.ijdrr.2023.103571>
- [9] Tumu Johnson and Emily Joy Carroll. 2022. Constellations of disability: 10 Principles of disability justice. *Clinical Psychology Forum* 1, 353: 54–64. <https://doi.org/10.53841/bpscpf.2022.1.353.54>
- [10] Rabindra Lamsal and T. V. Vijay Kumar. 2020. Artificial Intelligence and Early Warning Systems. In *AI and Robotics in Disaster Studies*, T. V. Vijay Kumar and Keshav Sud (eds.). Springer Nature, Singapore, 13–32. [https://doi.org/10.1007/978-981-15-4291-6\\_2](https://doi.org/10.1007/978-981-15-4291-6_2)
- [11] Janet E. Lord. 2023. Accounting for disability in international humanitarian law. *International Review of the Red Cross* 105, 922: 60–98. <https://doi.org/10.1017/S1816383122001072>
- [12] Ayan Mukhopadhyay. 2023. Artificial Intelligence for Emergency Response. <https://doi.org/10.48550/arXiv.2306.10068>
- [13] Claire F. O'Reilly, Louise Caffrey, and Caroline Jago. 2021. Disability Data Collection in a Complex Humanitarian Organisation: Lessons from a Realist Evaluation. *International Journal of Environmental Research and Public Health* 18, 19: 10334. <https://doi.org/10.3390/ijerph181910334>
- [14] Claire F. O'Reilly and Caroline Jago. 2024. Disaggregation of humanitarian data by disability: a realist evaluation of the use of the Washington Group Questions to support more inclusive practices. *Journal of International Humanitarian Action* 9, 1: 6. <https://doi.org/10.1186/s41018-023-00147-0>
- [15] Mahika Phutane, Ananya Seelam, and Aditya Vashistha. 2024. “Cold, Calculated, and Condescending”: How AI Identifies and Explains Ableism Compared to Disabled People. Retrieved April 12, 2025 from <https://www.semanticscholar.org/paper/%22Cold%2C-Calculated%2C-and-Condescending%22%3A-How-AI-and-Phutane-Seelam/d19cee06f3dc27fd9458662651bba75ebbf8957>
- [16] Michael Pizzi, Mila Romanoff, and Tim Engelhardt. 2020. AI for humanitarian action: Human rights and ethics. *International Review of the Red Cross* 102, 913: 145–180. <https://doi.org/10.1017/S1816383121000011>
- [17] Cathy Roche, P. J. Wall, and Dave Lewis. 2023. Ethics and diversity in artificial intelligence policies, strategies and initiatives. *AI and Ethics* 3, 4: 1095–1115. <https://doi.org/10.1007/s43681-022-00218-9>
- [18] Sarah W Spencer. Humanitarian AI: The hype, the hope and the future. *Humanitarian Practice Network*. Retrieved March

- 21, 2025 from <https://odihpn.org/publication/humanitarian-artificial-intelligence-the-hype-the-hope-and-the-future/>
- [19] 2015. Sendai Framework for Disaster Risk Reduction 2015-2030 | UNDRR. Retrieved March 4, 2025 from <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>
- [20] 2015. Minimum standards for age- and disability-inclusive humanitarian responses launched. *Sphere*. Retrieved March 4, 2025 from <https://spherestandards.org/minimum-standards-for-age-and-disability-inclusive-humanitarian-responses-launched/>
- [21] Disability inclusion in humanitarian action. *Humanitarian Practice Network*. Retrieved March 4, 2025 from <https://odihpn.org/publication/disability-inclusion-in-humanitarian-action/>
- [22] Convention on the Rights of Persons with Disabilities (CRPD) | United Nations Enable. *United Nations Department of Economic and Social Affairs*. Retrieved March 9, 2023 from <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>
- [23] National Council on Disability | The Impact of Hurricanes Katrina and Rita on People with Disabilities: A Look Back and Remaining Challenges. Retrieved March 4, 2025 from <https://www.ncd.gov/report/the-impact-of-hurricanes-katrina-and-rita-on-people-with-disabilities-a-look-back-and-remaining-challenges/>
- [24] IASC Guidelines, Inclusion of Persons with Disabilities in Humanitarian Action, 2019 | IASC. Retrieved April 12, 2025 from <https://interagencystandingcommittee.org/iasc-guidelines-on-inclusion-of-persons-with-disabilities-in-humanitarian-action-2019>
- [25] AI Ethics and Governance in Practice. *The Alan Turing Institute*. Retrieved April 12, 2025 from <https://www.turing.ac.uk/research/research-projects/ai-ethics-and-governance-practice>
- [26] KoboToolbox. *KoboToolbox*. Retrieved March 4, 2025 from <https://www.kobotoolbox.org/>
- [27] ODK - Collect data anywhere. Retrieved March 4, 2025 from <https://getodk.org>