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AI'S DUAL EDGE: ADVANTAGES AND DISADVANTAGES FOR VULNERABLE GROUPS IN THE DIGITAL AGE

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ABSTRACT

Artificial intelligence (AI) presents a paradoxical impact on vulnerable populations—elderly individuals, children, persons with disabilities, ethnic minorities, and low-income communities—offering transformative accessibility and inclusion while simultaneously amplifying systemic biases, privacy invasions, and socioeconomic displacement. This chapter examines AI's dual role through doctrinal analysis of global frameworks, including the EU AI Act (2024), UNESCO's ethical guidelines (2021), and India's draft Digital India Act (2023), alongside empirical insights from recent studies and crime data. It highlights advantages such as AI-enabled assistive technologies, personalized education, and predictive health monitoring that empower marginalized groups, contrasted with disadvantages like algorithmic discrimination, job automation threats, and heightened exposure to digital harms. A critical comparative lens reveals governance gaps in emerging economies and proposes actionable recommendations: risk-based regulation, inclusive data practices, digital literacy initiatives, and enhanced monitoring of AI-related incidents. By balancing innovation with equity, the chapter advocates for human-centered AI governance to ensure technology serves as an enabler rather than an exacerbator of vulnerability in the digital era.

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INTRODUCTION

Artificial intelligence (AI) has permeated nearly every aspect of modern life, from healthcare and education to employment and social interactions. While AI promises transformative benefits, its impacts are not uniformly distributed across society. Vulnerable groups—defined here as populations facing systemic disadvantages, including the elderly, children, persons with disabilities, ethnic and racial minorities, low-income individuals, and those in developing regions—often experience AI's effects in amplified ways. These groups may lack access to technology, face biases embedded in AI systems or be disproportionately affected by automation's disruptions. Conversely, AI can empower them through tailored solutions that enhance accessibility and inclusion.

Recent studies highlight this duality. For instance, the 2025 Human Development Report by the United Nations Development Programme (UNDP) emphasizes that AI's trajectory depends on human choices, potentially exacerbating inequalities if not managed inclusively. Similarly, a global survey by KPMG in 2025 reveals rising AI adoption but persistent trust issues, particularly around risks like discrimination. In the context of the European Union's AI Act (2024) and UNESCO's ethical guidelines (2021), which stress human rights protections, this chapter explores AI's advantages and disadvantages for vulnerable groups. Drawing on doctrinal analysis of frameworks like India's draft Digital India Act (2023) and empirical data from sources such as the National Crime Records Bureau (NCRB), it provides critical insights and recommendations.

This analysis is timely, as AI's rapid evolution—evident in generative models and algorithmic decision-making—demands proactive governance to mitigate harms while harnessing benefits. The chapter proceeds by delineating advantages, disadvantages, a critical comparative analysis, and policy recommendations, aiming to foster public understanding and informed discourse.

ADVANTAGES OF AI FOR VULNERABLE GROUPS

AI offers significant opportunities to address longstanding barriers faced by vulnerable populations, promoting equity and empowerment. One key advantage is enhanced accessibility for persons with disabilities. AI-powered assistive technologies (ATs), such as real-time captioning, speech-to-text converters, and predictive text systems, enable greater independence. For example, AI-driven prosthetics and mobility aids use machine learning to adapt to users' needs, improving quality of life for the disabled and elderly. A 2025 study in the *Journal of Healthcare Informatics Research* notes that integrating AI with ATs has led to a 28% increase in patient satisfaction among non-English-speaking disabled individuals by reducing communication errors. UNESCO's ethics recommendations underscore this, advocating AI for human rights fulfillment, including accessibility.

For the elderly, AI facilitates aging in place through health monitoring and predictive analytics. Wearable devices and smart home systems detect falls, monitor vital signs, and predict health declines, reducing hospitalization rates. In low-income communities, AI chatbots provide affordable mental health support, as explored in a 2025 APA advisory on generative AI for wellness, which highlights their role in offering empathetic interactions to underserved groups. Children in vulnerable settings benefit from personalized education; AI tutors adapt to learning paces, bridging gaps in under-resourced schools. A UNDP report illustrates how AI can democratize education in developing regions, potentially lifting millions out of poverty.

Ethnic minorities and low-income groups gain from AI in economic inclusion. Algorithmic job matching platforms connect users to opportunities, while financial AI tools offer micro-loans based on alternative data, bypassing traditional credit biases. In global development, AI mitigates biases when responsibly designed, improving access to services for marginalized communities, as noted in a 2025 analysis by Winston & Strawn. India's draft Digital India Act proposes AI regulations to ensure safe harbors for such beneficial uses, fostering innovation.

Critically, these advantages hinge on equitable deployment. When AI systems are trained on diverse datasets, they can reduce disparities; for instance, AI in social work aids decision-making for homeless populations, as per a 2025 Virginia Tech study, enhancing resource allocation. Overall, AI's advantages lie in its potential to scale solutions, making support accessible and cost-effective for vulnerable groups.

DISADVANTAGES OF AI FOR VULNERABLE GROUPS

Despite its promise, AI poses substantial risks to vulnerable populations, often amplifying existing inequalities. A primary concern is algorithmic bias, where AI systems perpetuate discrimination due to skewed training data. For minorities, this manifests in biased hiring algorithms that favor dominant groups, limiting opportunities. A 2025 Brookings Institution report warns that health AI biases can exacerbate disparities, providing inaccurate results for underserved communities. Persons with disabilities face similar issues; AI accessibility tools may fail if not trained on diverse impairments, as highlighted in a UNRIC analysis, potentially locking them out of participation.

For children, AI risks include exposure to harmful content via recommendation systems, which can amplify misinformation or predatory behaviors. The EU AI Act prohibits manipulative AI targeting vulnerabilities like age, but in regions like India, lacking such enforcement, NCRB data shows rising cybercrimes against children, up over 400% in recent years, partly AI-driven. Elderly individuals are susceptible to privacy invasions through surveillance AI, eroding autonomy. A 2025 McKinsey survey reports that 51% of AI-using organizations have encountered negative consequences, including privacy breaches affecting vulnerable users.

Job displacement is another disadvantage, disproportionately impacting low-skilled workers in vulnerable groups. Automation in manufacturing and services could widen the digital divide, as per a CIPIT study on AI's impact. Environmental risks compound this; data centers powering AI strain resources in marginalized areas, posing health hazards, as analyzed in a 2025 TechPolicy Press report.

Ethically, AI's opacity—lacking transparency—exacerbates harms. Smith and Anderson (2023) discuss how AI amplifies global harassment, but broader risks include overconfidence in AI decisions, per APA research. In India, the Shreya Singhal judgment (2015) protects speech but leaves gaps in addressing AI biases. Critically, these disadvantages stem from design flaws, underscoring the need for inclusive development.

CRITICAL ANALYSIS: BALANCING BENEFITS AND RISKS

Doctrinally, frameworks like the EU AI Act provide a risk-based approach, categorizing AI by potential harm and mandating assessments for high-risk systems affecting vulnerable groups. This contrasts with India's draft Digital India Act, which proposes AI audits but lacks the EU's prohibitive categories for manipulative uses.

UNESCO's guidelines emphasize non-discrimination, requiring bias mitigation to protect minorities and the disabled.

Comparatively, while AI benefits like personalized care are evident in elderly support, risks such as data misuse—highlighted in an EDF report—demand proportionality. For children, AI's educational advantages are offset by safety concerns; a BMJ study notes AI vehicles' poor recognition of child pedestrians, stemming from biased training. Empirical data from Pew Research (2025) shows Americans wary of AI in personal matters, reflecting broader societal distrust among vulnerable populations.

Critically, AI's dual edge is a matter of choice, as per the UNDP report. Inclusive design can amplify advantages, but without it, disadvantages prevail. In social work, AI enhances practice for IDD individuals but risks bias, per a VBP Blog analysis. India's constitutional framework, via Shreya Singhal, ensures free speech but must evolve to address AI harms doctrinally.

This analysis reveals that while AI can bridge gaps, unregulated deployment widens them, necessitating ethical and legal interventions.

RECOMMENDATIONS FOR EQUITABLE AI GOVERNANCE

To maximize advantages and minimize disadvantages, policymakers should adopt multifaceted strategies. First, enact comprehensive regulations like the EU AI Act in India, incorporating risk classifications and mandatory bias audits for systems impacting vulnerable groups. The draft Digital India Act should be finalized with provisions for independent oversight.

Second, promote inclusive data practices per UNESCO, ensuring diverse representation in AI training to reduce biases against minorities and disabled

persons. Invest in digital literacy programs for elderly and children, drawing from APA guidelines on safe AI chatbot use.

Third, foster public-private partnerships for AI in social services, as in Rutgers' human-AI collaboration model, to enhance benefits for homeless and low-income groups. Monitor environmental impacts, mitigating data center risks in vulnerable communities.

Fourth, update NCRB reporting to track AI-related incidents, providing empirical bases for policy.

Finally, encourage global standards, aligning with UNDP's call for human-centered AI to empower all.

These recommendations aim to create an equitable AI ecosystem.

CONCLUSION

AI's impact on vulnerable groups embodies a profound duality: a tool for empowerment that, if mishandled, deepens vulnerabilities. Advantages in accessibility, health, and inclusion are counterbalanced by risks of bias, privacy erosion, and exclusion. Through critical analysis of frameworks like the EU AI Act and UNESCO guidelines, this chapter illuminates pathways for balanced governance. By implementing inclusive recommendations, societies can harness AI's potential while safeguarding the most at-risk, fostering a digital age of true equity.

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