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Geospatial approaches to child welfare: Enhancing protection systems through GIS-based spatial analysis of vulnerability in urban and rural areas

Weerasinghe BPGSY*

Department of Geography, University of Ruhuna, Sri Lanka

**yasas0626@gmail.com*

Background: Child protection remains a pressing global concern, particularly in regions where children face persistent risks of abuse, neglect, exploitation, and service deprivation. The spatial nature of these issues often leads to inconsistent access to support services across urban and rural areas. This research investigates how Geographic Information Systems (GIS) can be leveraged to identify and analyze vulnerable areas, monitor disparities in child welfare services, and support more targeted, equitable interventions.

Method: The study employed a mixed-methods design, combining spatial data analysis with qualitative insights from stakeholders such as social workers, local authorities, and community leaders. GIS mapping tools were used to visualize child protection indicators including access to education, healthcare, and social services overlaid with socio-economic and demographic risk factors. Field surveys and interviews complemented the spatial analysis, validating the locations of high-risk zones and service gaps.

Results: The results revealed significant disparities between urban and rural areas. Urban centers showed clusters of child vulnerability in informal settlements and overcrowded zones, while rural regions suffered from severe under-provision of essential services due to infrastructural and logistical limitations. Several high-risk areas previously undetected by conventional methods were highlighted, indicating the added value of geospatial techniques.

Conclusions: Discussion of the findings emphasizes that GIS enables the detection of service deserts and supports proactive policy-making by allowing for the spatial targeting of interventions. GIS provided real-time monitoring potential and supported inter-agency coordination through visual data sharing. The study concludes that integrating GIS into national child protection frameworks can enhance decision-making, improve the efficiency of resource allocation, and strengthen monitoring and evaluation systems. It recommends institutionalizing geospatial tools within child welfare governance, building technical capacity among protection officers, and promoting cross-sectorial collaboration to ensure data consistency and accessibility.

Keywords: Child protection, geospatial, GIS, technologies, vulnerability.