

Working Paper : “DISENTANGLING THE HETEROGENEOUS EFFECTS OF CLIMATE SHOCKS AND CONFLICT EXPOSURE ON CHILD MALNUTRITION”

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Abstract

Child malnutrition remains a persistent public health challenge in low-and middle-income countries, driven by complex and spatially uneven environmental and socio-political stressors. This study examines the spatially heterogeneous effects of climate variability and conflict exposure on childhood malnutrition in Pakistan focusing primarily on stunting using high-resolution gridded data from 2001 to 2017. By integrating satellite-derived climate indicators, geolocated conflict events, and socioeconomic covariates, we employ a suite of spatially explicit modelling approaches including Geographically Weighted Regression (GWR), Multiscale GWR (MGWR), and Mixed GWR. Results indicate that the impacts of climatic shocks especially drought intensity and extreme precipitation are highly location-dependent and operate at different spatial scales. Conflict exposure further intensifies these adverse effects in vulnerable and socioeconomically deprived regions, with MGWR revealing stronger fine-scale variations compared to traditional GWR. Mixed GWR identifies a combination of global drivers (e.g., long-term socioeconomic deprivation) and locally varying predictors (e.g., seasonal drought anomalies and conflict proximity). Collectively, the findings highlight substantial spatial heterogeneity in the determinants of child malnutrition and demonstrate that ignoring local variations can mask critical pockets of vulnerability. This study provides a nuanced understanding of how climate and conflict interact across space to influence child health outcomes. The results underscore the need for spatially tailored and multisectoral policy interventions that address both environmental and political fragility to effectively reduce child malnutrition.