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## Climate Variability and Rural Children Health Outcomes

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### Abstract

Children in rural farming households are often vulnerable to a multitude of risks, including health risks associated with climate change and variability. Cognizant of this, this study empirically traced the relationship between climate variability and nutritional health outcomes in rural children, while identifying the cause-and-effect transmission mechanisms. We combined four waves of the rich Uganda National Panel Survey (UNPS), part of the World Bank Living Standards Measurement Studies (LSMS) for the period 2009-2014, with long-term gridded and high frequency rainfall, and temperature datasets. In particular, rainfall and temperature datasets were from Climate Hazards group Infrared Precipitation Station (CHIRPS) and Moderate Resolution Imaging Spectroradiometer (MODIS) products respectively. Self-reported drought and flood shock variables were further used in separate regressions for triangulation purposes and robustness checks. Panel fixed effects regressions were applied in the empirical analysis, accounting for a variety of causal identification issues.

The results showed significant negative outcomes for children’s anthropometric measurements due to the impacts of moderate and extreme droughts, extreme wet spells and heat waves. On the contrary, moderate wet spells were positively linked with nutritional measures. Agricultural production and child diarrhea were the main transmission channels, with heat waves, droughts and high rainfall variability negatively affecting crop output. Probability of diarrhea was positively related to increases in temperature and dry spells. Results further revealed that children in households who engaged in *ex-ante* or anticipatory risk reducing strategies such as savings had better health outcomes as opposed to those engaged in *ex-post* coping such as involuntary change of diet. These results highlight the importance of adaptation in smoothing the harmful effects of climate variability on health of rural households and children in Uganda.

**Keywords:** Agricultural production, children, diarrhea, drought, high temperatures, satellite weather data, undernutrition