Geospatial Smoothing for Lower-Level Estimation: A Case Study of the Uganda Demographic and Health Survey for Generating Lower-Level Substandard Household Living Conditions Index

Monitoring standards of living, including health metrics at lower levels, is crucial for identifying and addressing geographic inequities. However, national surveys are often insufficient to support the generation of estimates at lower levels. This study geospatial analysis approach to estimate both the transition and lower-level patterns of SDG indicators using national survey data and underscores the significance of collecting geolocation data to generate evidence for unobserved enumeration areas. To generate substandard Household Living conditions Index (sHLI) based on substandard household walls, roofs, floors, unimproved water sources, unimproved toilets, and overcrowding, we first generated 1x1km raster pixel estimates for the six measures. Smoothing was done through universal and ordinary kriging in R, followed by the extraction of zonal statistics using QGIS. The results showed a varying distribution of the substandard sHLI across various levels, with the index ranging from 8% to 92%.

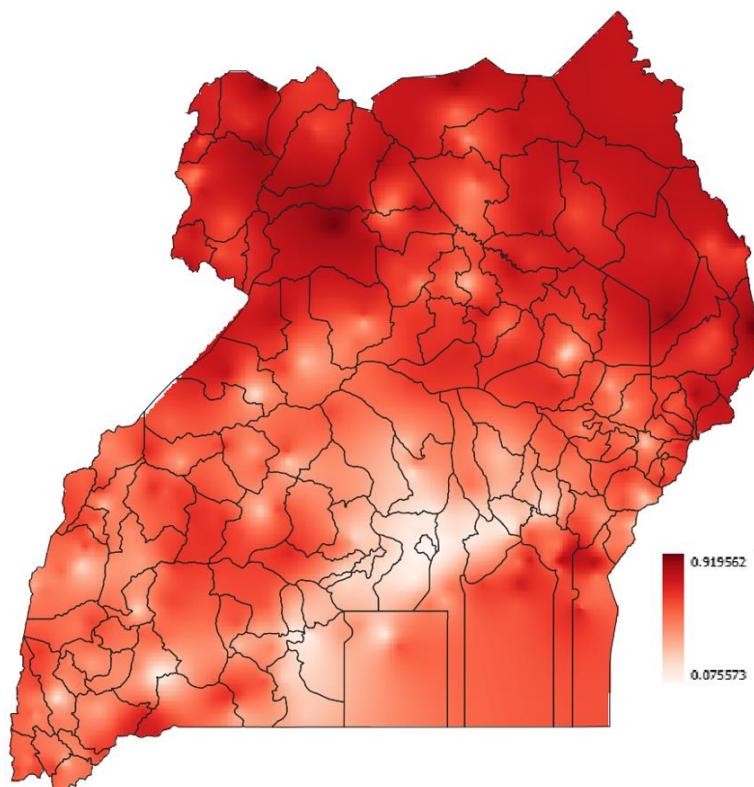**Figure 1: Households' standard of living conditions index across the country**

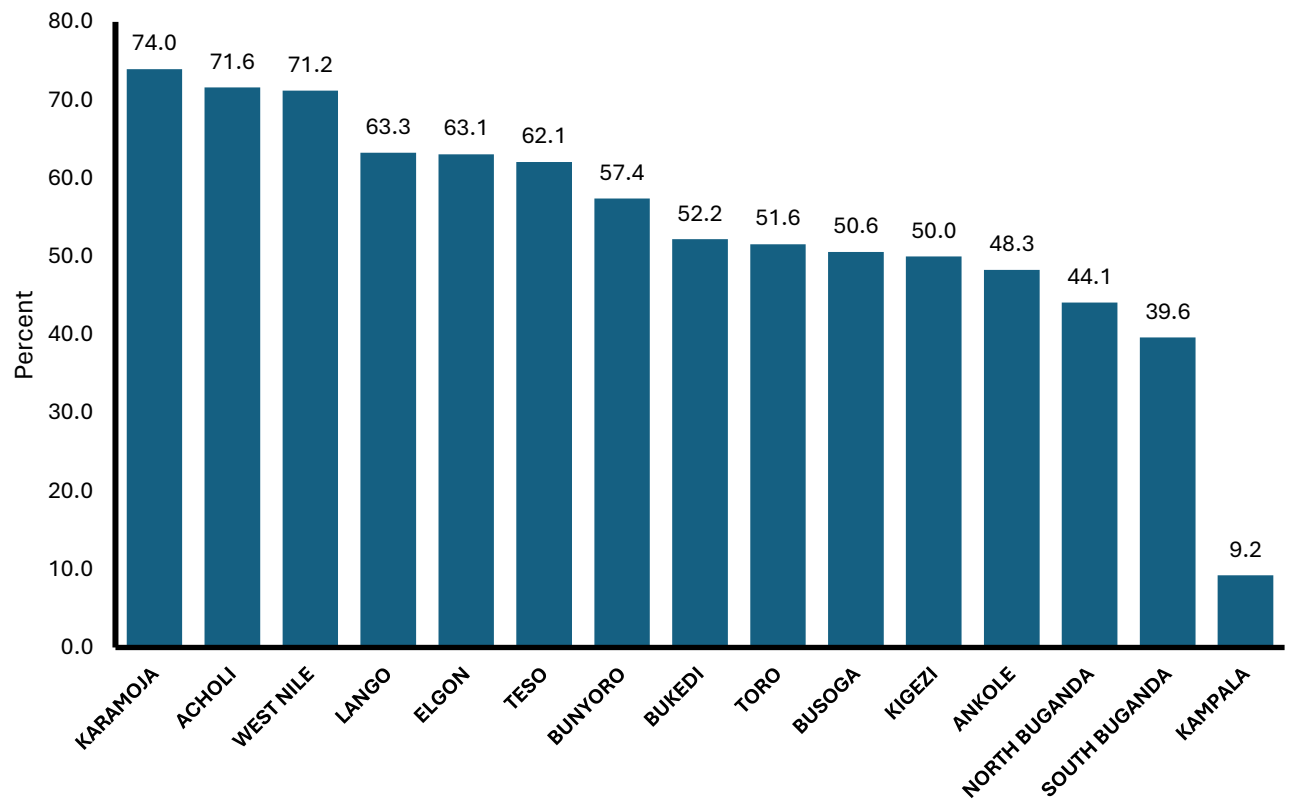**Figure 2: substandard Household living conditions index in Uganda across subnational level.**

Figure 3: substandard Household living conditions index in Uganda in Greater Kampala Metropolitan area.