Factors contributing to the fertility stalls in Rwanda using Machine learning

Recent literature on fertility trends in Rwanda highlights a notable shift towards declining fertility rates after a period of stagnation. Beginning with a high total fertility rate (TFR) of 8.25 in the early 1980s, Rwanda saw a gradual decrease to 6.3 in the early 1990s. Subsequently, despite a relatively stable TFR between 1992 (6.2) and 2005 (6.1), a significant drop occurred, dropping from 6.1 in 2005 to 4.6 in 2010, 4.2 in 2015 and further to 4.1 in 2020. This sharp decline prompts inquiry into the underlying factors driving the observed transition.

An upcoming study investigates into this fertility dynamic through an extensive analysis of socio-economic variables and reproductive health service accessibility, leveraging machine learning methodologies. Drawing on data from the 2010, 2015, and 2020 Rwanda Demographic and Health Surveys, the research examines women of reproductive age (15–49 years). Principal Component Analysis (PCA) will be employed to assess factors contributing to fertility stalls, including education level, employment status, household wealth, under-five mortality, urban/rural residence, and family planning utilization, exposure to family planning information, unwanted fertility, and unmet needs.

By identifying patterns and relationships associated with fertility stalls, the study seeks not only to enhance understanding of Rwanda's demographic landscape but also to inform evidence-based interventions and policy formulation in similar developing contexts. Insights garnered from this research hold potential for addressing challenges related to fertility dynamics beyond Rwanda's borders, contributing to broader global efforts aimed at addressing population growth and reproductive health.