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Predictive Analytics Models for Food Security Risk Assessment in Somali Regions: A Three-Year Prognostic Study

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Abstract

Food security in Somali regions is characterized by periodic droughts and conflicts that exacerbate existing vulnerabilities. A mixed-method approach combining quantitative data analysis with qualitative insights from local stakeholders was employed. The study utilised a Random Forest model to predict food insecurity trends based on climate and conflict indices. The Random Forest model demonstrated an accuracy rate of 78% in predicting future food security conditions, showing significant variability across different regions within Somalia. The predictive models identified specific patterns indicative of future droughts and conflicts that threaten food security, offering a tool for early intervention and policy planning. Integrate the predictive analytics tools into regional food security strategies to enhance resilience against shocks. Predictive Analytics, Food Security, Somalia, Random Forest Model Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords:

Geographic Terms:

African

Somali

Methodological/Thoretical Terms:

Data Mining

Predictive Modelling

Regression Analysis

Time Series Forecasting

Validation Studies

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