

Abstract

Stunting is one of the public health issues that remains a serious challenge in Indonesia, particularly in West Java Province. This study aims to develop a predictive model for stunting prevalence using the Random Forest algorithm and a time-based feature expansion approach. The dataset used includes various socioeconomic indicators obtained from the West Java Central Statistics Agency (BPS). To improve prediction accuracy, historical feature development was conducted. The results of the study indicate that the feature expansion approach significantly improves model performance. The best model, which combines t-3 expansion, achieves accuracy, precision, recall, and F1 scores of 96% each. Spatial analysis revealed a declining trend in stunting prevalence from 2019 to 2023. However, predictions for 2024 to 2027 indicate fluctuating dynamics, with some regions showing improvement while others remain unchanged. These findings confirm that the application of machine learning based on temporal data can be an effective tool in mapping stunting risks and supporting the formulation of more targeted intervention strategies. This research is expected to make a tangible contribution to sustainable efforts to combat stunting in Indonesia.

Keywords: Stunting, Machine Learning, Random Forest, Feature Expansion, West Java