

**Title :** Forecasting the Monthly Cumulative Number of Influenza Patients in Health Region 1

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## ABSTRACT

This study aimed to develop forecasting models for the monthly cumulative number of influenza patients in Health Region 1 and to compare the performance of four forecasting models: Random Forest, AdaBoost, XGBoost, and LightGBM. Monthly data on the cumulative number of influenza patients in Health Region 1 from January 2013 to March 2024 (135 months) were used to construct the forecasting models. The test dataset consisted of data from April 2024 to March 2025 (12 months) and was used to evaluate and compare model accuracy. The evaluation criteria for forecasting error included the Mean Absolute Percentage Error (MAPE) and the coefficient of determination (R-Squared). The results showed that the AdaBoost model was the most suitable forecasting model, as it achieved the lowest MAPE on the training set of 1.71% and the lowest MAPE on the test set of 4.36%, as well as the highest R-Squared value of 99.98%.