

Hybrid prediction of Covid-19 notifications in Colombia

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This study investigates the efficacy of various mathematical, statistical, machine learning, and hybrid modeling approaches for forecasting daily COVID-19 notifications in Colombia. The dataset comprises official records spanning from March 6, 2020, to January 13, 2021. We present eighteen distinct models fitted to the time series data for a defined training set, followed by evaluation and comparative analysis across two different test sets with prediction horizons of 7 and 14 days. Parameter estimation was conducted on the training periods: the first encompassing March 6, 2020, to August 14, 2020, and the second extending from March 6, 2020, to January 13, 2021. In each experimental scenario, we discuss the top performing models, as determined by the lowest Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and Mean Absolute Percentage Error (MAPE). The primary finding indicates that hybrid approaches offer a statistically significant reduction in prediction error relative to baseline models.

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