TIME SERIES FORECASTING MODEL OF DENGUE INCIDENCE IN THE PROVINCE OF ILOILO WITH METEOROLOGICAL FACTORS AS EXTERNAL REGRESSORS

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ABSTRACT

The province of Iloilo posted the highest increase of dengue cases in the Western Visayas region in 2016 despite the noted 2.2% decrease of clinically confirmed cases nationwide. The province has placed adequate attention on technical elements specifically on the outbreak preparedness, yet it is important to give additional efforts to strengthen the surveillance and information system in the province. A seasonal autoregressive integrated moving average with external regressor (SARIMAX) model was formulated to forecast the future monthly number of dengue cases in Iloilo province using the meteorological parameters as the explanatory variables. It was found that only the rainfall variable significantly affects the number of dengue cases in Iloilo province, hence the only variable included in the SARIMAX model as the external regressor. The final forecasting model SARIMAX$(3,1,1)(1,0,0)_{12}$ is capable of representing the number of dengue cases in subsequent months with relative accuracy. The forecasts of dengue incidence from the final model are imperative for assessing future healthcare and public health programs in the province of Iloilo.