

Universiti Teknologi MARA

**Prediction of Dengue Outbreak:
A Comparison Between ARIMA and Holt-Winter's
Methods**

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**Report submitted in fulfilment of the requirements for Bachelor of Science
(Hons.) Management Mathematics Faculty of Computer and Mathematical
Sciences**

January 2021

STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.



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ABSTRACT

Dengue cases is a globally known infection in which the virus is transmitted by mosquitoes and can lead to death. Selangor has been reported to have the highest incidence of dengue infection among the communities in Malaysia. There is currently a new pandemic, COVID-19, which occurred all over the world, including Selangor, and which led to this study on the pattern of dengue cases during COVID-19. The aim of this study was to develop the best model to predict the future value of dengue cases in Selangor. In order to meet the objectives, the ARIMA method and the Holt's Winter method are used to evaluate dengue case data collected in Selangor. The best model is chosen by evaluating the Mean Square Error (MSE), Root Mean Square Error (RMSE) and Mean Absolute Percent Error (MAPE) measurement errors. Then, the predicted number of dengue cases is calculated using the best model generated. The best model can be used to predict dengue cases in Selangor is Additive Holt-Winter method since it showed the lowest values of all measurement errors. The trend of dengue in Selangor during COVID-19 showed that fewer cases occurred compared to the phase in which COVID-19 was free. In conclusion, with certain precautions that may be applied by the government to prevent people from going out freely in public places, the number of dengue can be reduced due to factors that can be avoided.

Keywords: Prediction, Dengue, Selangor, ARIMA model, Holt-Winter's Model

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