UNIVERSITI TEKNOLOGI MARA

PREDICTION OF NEW CONFIRMED CASES OF COVID-19 IN MALAYSIA USING UNIVARIATE TIME SERIES MODELS

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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

In December 2019, a novel coronavirus, called COVID-19, was discovered in Wuhan, China, and has spread to different cities in China as well as to other countries including Malaysia. COVID-19 epidemic in Malaysia started as a small wave of 22 cases in January 2020 through imported cases. The number of confirmed cases of COVID-19 is increasing daily and reached to 673 cases on March 17, 2020. A limited lock-down approach called Movement Control Order (MCO) was immediately initiated to the whole country as a way to suppress the epidemic trajectory. Therefore, this study is conducted to predict the new confirmed cases of COVID-19 in Malaysia using univariate time series models. The models used are Mean model, Naïve model, Autoregressive Integrated Moving Average (ARIMA) model, and Exponential State Space models. The data used for this study is collected from January 25 to November 23, 2020 from the Ministry of Health Malaysia's website. Five different sets of data partitioning will be used to ensure the accuracy of the forecast values generated. R-programming was used to analyze the data for this study. The results indicates that Naïve model with partitioning set of 95 percent (Estimation Part) and 5 percent (Evaluation Part) shown a better performance in terms of Mean Error (ME), Root Mean Squared Error (RMSE), and Mean Percentage Error (MPE). However, its performance will decline whenever there is a random outburst in the data.

Keywords: COVID-19, epidemic, Movement Control Order (MCO), Mean, Naïve, ARIMA, Exponential State Space, R-programming.

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