

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**PREDICTING COVID-19 CASES IN MALAYSIA DURING THE
VACCINATION PROGRAM USING THE BOX – JENKINS
APPROACH**

(P15S22)

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**Report submitted in partial fulfillment of the requirement
for the degree of
Bachelor of Science (Hons.) (Mathematics)
Faculty of Computer and Mathematical Sciences**

FEBRUARY 2023

ACKNOWLEDGEMENTS

In the name of Allah, the most gracious, the most merciful. First and foremost, we are grateful to Allah S.W.T. for giving us the strength to complete this project successfully. We are truly humbled and thankful for this opportunity.

We would like to express our special thanks of gratitude to our supervisor, Mrs. Norliana Binti Mohd Lip, for providing invaluable guidance and support throughout this project. Her willingness to share her expertise, knowledge, and time to assist us in any task and responsibility helped us to sharpen our thinking skills to a higher level. We would also like to extend our gratitude to our MSP660 lecturer, Mr. Abdullah bin Yahya for giving us much advice and motivating us to fulfill this project within the limited time frame. Without their continuous support, this project would not have been possible to complete.

Lastly, we would like to thank our family for supporting us mentally and physically while we were completing this project and our friends who have helped us with their valuable suggestions and guidance in various phases of the completion of the project.

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ABSTRACT

COVID-19 also known as the novel coronavirus is a highly infectious respiratory illness that has caused a global pandemic. The government has implemented various measures to prevent the spread of the virus such as mandatory mask-wearing and movement restrictions. Therefore, the government has set a target of vaccinating at least 80% of the population by the end of 2021 because the COVID-19 cases in Malaysia have been steadily increasing. In February 2021, the first shipment of the COVID-19 vaccine reached Malaysia and the first vaccine dose was given to frontliners and patients with chronic diseases. Unfortunately, the Omicron variant started to spread in Malaysia which cause COVID-19 cases began to increase again since this type is more quickly infected than the previous variants. To further reduce the rate of COVID-19 instances, the government has advised Malaysians to take a booster. In this research, we aim to determine the most suitable model for predicting COVID-19 cases after vaccination in Malaysia by using the Box-Jenkins method, to forecast COVID-19 Malaysian cases after vaccination and to analyze the pattern of the cases of COVID-19 after vaccination. The best-fit models will be chosen based on the lowest error measures of the Aikake Information Criteria (AIC), Schwarz Criterion (BIC) and no serial correlation of the Durbin Watson (DW) test to forecast the COVID-19 cases after vaccination in Malaysia. The finding shows that the best model for the COVID-19 cases in Malaysia is ARIMA (4,1,4) for death cases and ARIMA (4,1,1) for positive cases. ARIMA models can be used to ensure health and safety in fresh outbreak situations. Additionally, the pattern of the cases of COVID-19 before and after vaccination will be analyzed using the Pearson correlation coefficient (r) method that includes two variables which are the date of vaccination and booster intake with the death and positive cases of COVID-19. With no currently effective treatment available, this forecast method will help the better prepare to handle the epidemic appropriately and satisfactorily.