

# TRANSMISSIBILITY PREDICTION OF CORONAVIRUS DISEASE (COVID-19) OUTBREAK IN EARLY STAGES

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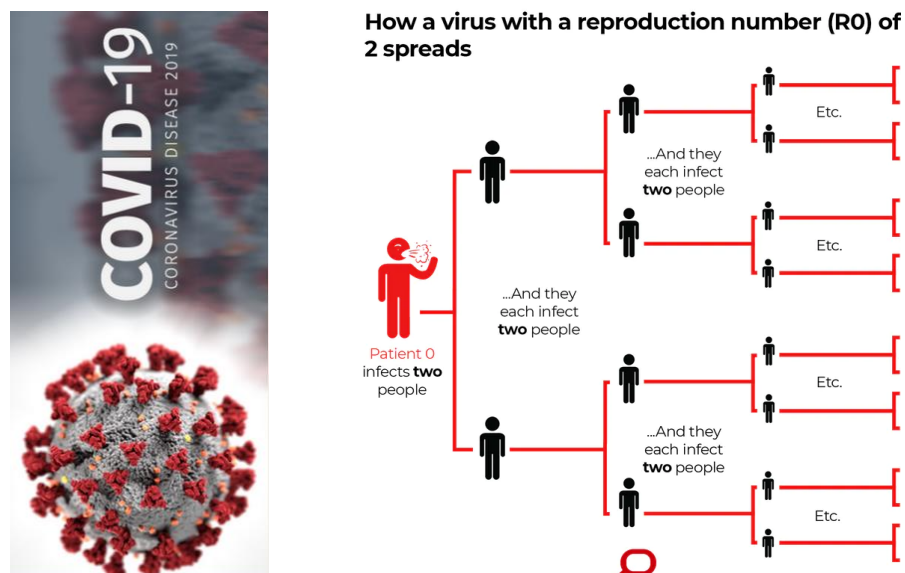


## ABSTRACT

The Covid-19 pandemic is still ongoing around the world. This study aims to predict the reproduction number,  $R_0$  for Covid-19 to measure the infectious level of this disease to the general population. To predict the reproduction number, a prediction method using the Probability Mass function is used with the dataset for the Covid-19 disease. This result has been divided into the first wave, second wave and third wave which suggest that the  $R_0$  is increased which correlate with the new strain of Covid-19 mutation "D614G" that is more infectious compared to the first wave strain. In a nutshell, with the  $R_0$  has been predicted, a containment plan is possible to curb the disease from spreading even further to the general population.

## PROBLEM STATEMENT

- The  $R_0$  is important to measure the infectious rate of a disease. It can tell the researcher or people the average number of people who will contract a contagious disease from one to another with the disease.
- Without knowing the  $R_0$  the plan to curb the disease would be ineffective.

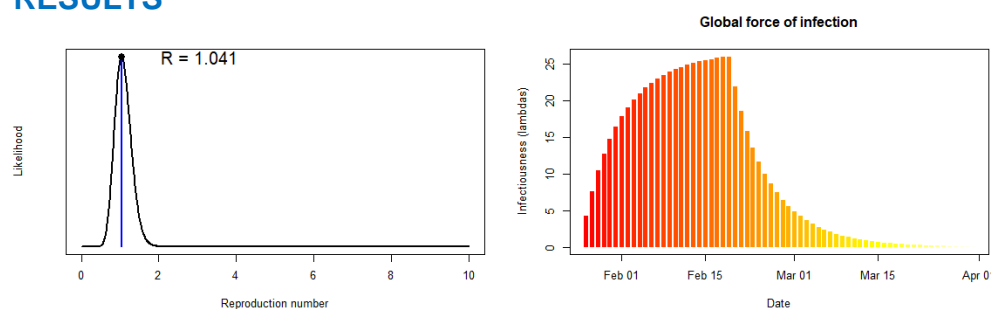


## AIM & OBJECTIVES

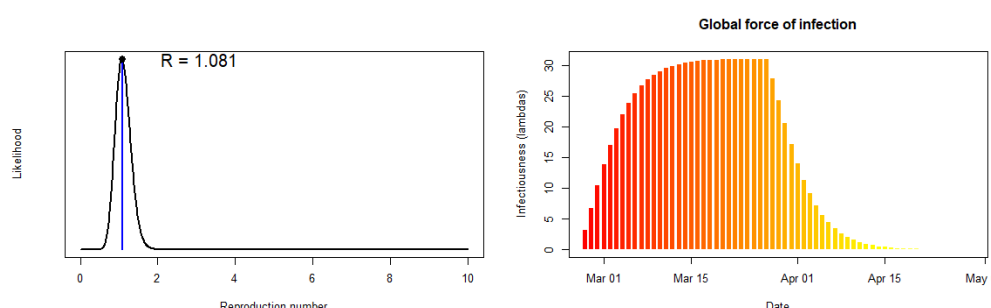
This research is aimed to predict the reproduction number ( $R_0$ ) of Covid-19 by using a prediction method. This can help the healthcare services to contain the spread of the disease.

- To study and analyze the existing works on reproduction number ( $R_0$ ) of Covid-19.
- To design and develop a Probability Mass Function method for reproduction number prediction.
- To test and validate the proposed method based on Covid-19 disease.

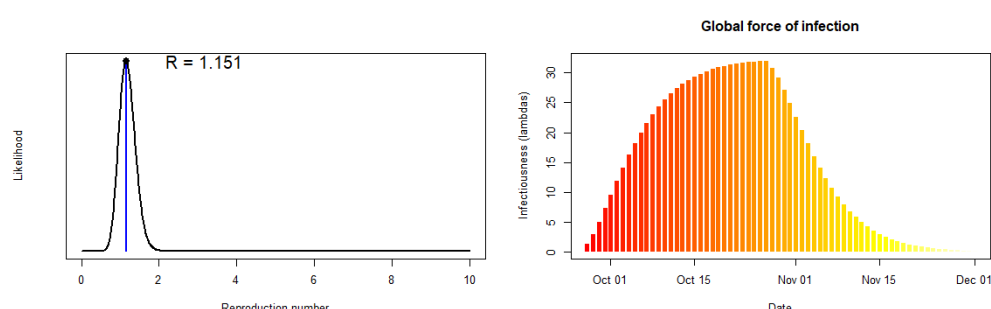
## RESULTS



The estimated  $R_0$  of first wave of Covid-19 in Malaysia

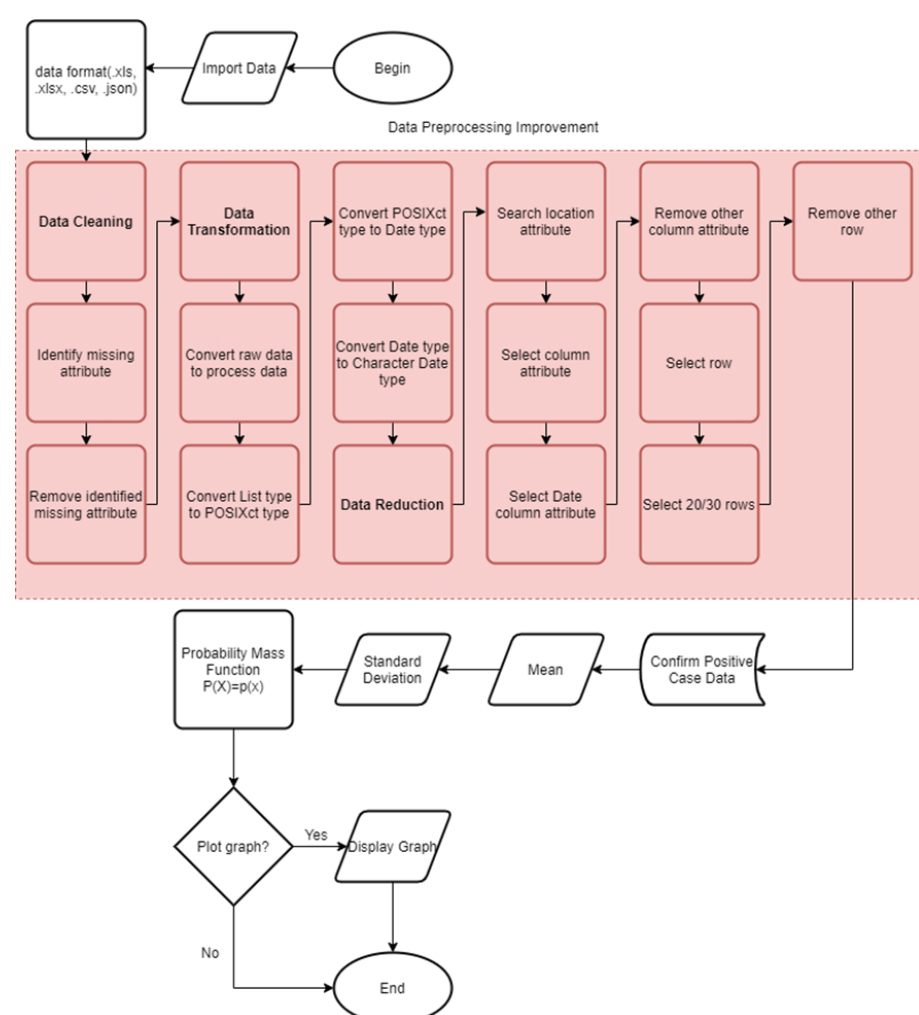


The estimated  $R_0$  of second wave of Covid-19 in Malaysia



The estimated  $R_0$  of third wave of Covid-19 in Malaysia

## METHODOLOGY



The flowchart above shows the experimental setup. The red outline shows the modification that is required for Covid-19 data processing.

## BENEFITS / USEFULNESS / APPLICABILITY

- The  $R_0$  is important to measure the infectious rate of a disease. It can tell the researcher or people the average number of people who will contract a contagious disease from one to another with the disease.
- The  $R_0$  can help the healthcare of each countries to contain the disease from completely overwhelming the healthcare of the countries and destroying the economy of the country from prolonged lockdown imposed by their respective government.
- With the  $R_0$  has been predicted, a containment plan is possible to curb the disease from spreading even further to the general population.

## Publication

- The importance of data classification using machine learning methods in microarray data, 19, 491-498, 2021 (Scopus)
- Missing-Values Imputation Algorithms for Microarray Gene Expression Data, 1986, 2019 (WoS/ISI)