

Capstone Project (week5)

FINAL REPORT

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INTRODUCTION:

Since, December 2019, a pneumonia infection broke out in Wuhan, Hubei province and spread in entire China and many other countries. Chinese health authorities observed notoriously a cluster of pneumonia cases of unknown aetiology.^{[1](#)}

Relations between the key cases and the city's South China Sea food market were found. The chance of another zoonosis or severe acute respiratory syndrome (SARS) outbreak was at the top of the priority, investigations were attempted which result in recognition of a novel coronavirus, SARS-CoV-2 (formerly 2019-nCoV), as the agent has entered as international outbreak in Hubei. China has revealed total of 72,528 confirmed cases till February 17, 2020.

In India, first case of COVID -19 was reported on January 30, 2020 who returned from Wuhan, China. Considering the first case as a matter of great worry, screening of traveller at airport had been started, immediately Chinese visas had been cancelled, and people who were found affected with COVID-19 had been quarantined.^{[5](#)}

The Ministry of Health and Family Welfare (MoHFW) of India had primarily warned to avoid travelling to China and advised quarantine of those returning from China.^{[6](#)}

However, India is at high risk for being the second highest populated country in the world. Most of the studies show the prediction of COVID -19 through modeling for growth of infected population. In the absence of a licensed vaccine or effective therapeutics for COVID-19, other advises from hand cleanliness to quarantine, a basic strategy to control spread of epidemic and alleviation mediation towards the early detection and quarantine of cases can break the chain of transmission. The SARS-CoV-2 pandemic is currently a great challenge for researchers, clinicians, health-care workers, and decision makers. We depict the most striking difficulties for statisticians who need to provide support in this pandemic with their proficiency. Having a knowledge of the dynamics of case load rate and recovery rate of COVID-19 can enhance the basic understanding to a large extent based on the current patterns of the severity of the epidemic. As COVID-19 cases are increasing day-by-day, case load rate will be of utmost importance in predicting the declination of the epidemic. In this article, we want to predict the date when the recovery rate of patients would be more than case load rate in India. This date is defined as disease declined date.

Data sources:

Data safety, patient's consent, ethical approvals are essential in non-pandemic circumstance but there are administrative barriers to get access to clinical data. Pandemic circumstances need precise handling of these issues and should be examined nationwide. Clinical data are extremely time-dependent and involve progressive statistical methods.⁷

Data has been obtained with parameters as confirmed cases, recovered cases and deaths from the online website

(`'https://raw.githubusercontent.com/CSSEGISa
ndData/COVID-
19/master/csse_covid_19_data/csse_covid_19_
time_series/time_series_covid19_confirmed_g
lobal.csv'`) Total 216919 confirmed cases, 104107
recovered cases and 6075 deaths were- reported till June
04, 2020 and included in the study.

RESULT:

Total 2169191 confirmed cases and 104107 recovered cases were involved in the study. Recovery rate had been estimated as 47.99% on the basis of confirmed and recovered cases. Total case load was found to be 106737 cases and case load rate was estimated as 49.21%. Death rate was obtained as 2.80% based on 6075 dead patients. Delta, being the difference of case load rate and recovery rate was obtained as 1.21% on June 04, 2020 . The value of delta has been estimated from January 30, 2020 to June 04, 2020. It has been predicted that the value of delta would be least on June 12, 2020; it means the difference between case load rate and recovery rate would approach a negligible value. This indicates that confirmed cases expected would start to decline thereafter with respect to recovered cases .