

# Literature Survey - Prediction Strategies

## 1)Forecasting the spread of COVID-19 under different reopening strategies

Paper link - <https://www.nature.com/articles/s41598-020-77292-8>

### Data -

COVID-19 case data with mobility data (United States)

### Goal -

How the spread of COVID-19 depends on preventive measures such as social distancing and how the reopening may affect the spread.

### Model used -

The most common model used to study the spread of COVID-19 is the *susceptible-infected-recovered (SIR)* model. In such models, there is a susceptible population, which is assumed to be equal to the population of whichever region is being examined minus the number of people that have previously had the disease. In this research , modified SIR model was used.

## 2)Forecasting Models for Coronavirus Disease (COVID-19): A Survey of the State-of-the-Art (Survey Article)

Published: 11 June 2020

Paper link - <https://link.springer.com/article/10.1007/s42979-020-00209-9>

### Data -

big data accessed from WHO/National databases and data from social media.

### Forecasting Techniques -

Categorization is important. Ex. 1. data in terms of population statistics

Because there is no need of sampling as the entire population is present in the dataset.

2. clinical data

for investigating better diagnostic methods and for pharmaceutical industries in formulating vaccines, drugs in a short time.

### Significant parameters for good prediction -

- Daily death count.
- Number of carriers.
- Incubation period.
- Environmental parameters, i.e., temperature, humidity, wind speed.
- Awareness about COVID-19.
- Medical facilities available.
- Social distancing, quarantine, isolation.
- Transmission rate.
- Mobility.
- Geographical location.
- Age and Gender.
- Highly and least vulnerable population.
- Underlying disease.
- Report time.
- Strategic policies and many more.

## 3)Mathematical Modelling Based Study and Prediction of COVID-19 Epidemic Dissemination Under the Impact of Lockdown in India

Paper link - <https://www.frontiersin.org/articles/10.3389/fphy.2020.586899/full>

### Data link -

<https://data.world/kim4597/world-covid19/workspace/intro>

### Model used -

SEIRD Model

five-compartment epidemic model i.e., Susceptible (S)-Exposed (E)-Infected (I)-Recovered (R)-Death (D) (SEIRD model) to study COVID-19 in India.

## 4)Survival-Convolution Models for Predicting COVID-19 Cases (Research Report Article)

Paper link - <https://www.frontiersin.org/articles/10.3389/fpubh.2020.00325/full>

Data link -

<https://www.worldometers.info/coronavirus/>

Model used -

*Survival-Convolution Model (CNN based)*

- **Conclusion -**

We can use compartmental models and apply them to mathematical modelling for good prediction.