Press Release

Prediction of Waning Time of Second Wave of COVID – 19 Spread in the States of Uttar Pradesh, Delhi, Karnataka, Maharashtra, Andhra Pradesh, Tamil Nadu, Kerala & West Bengal

SRM University – AP Study

Amaravati, June 02, 2021

In the current pandemic situation, a pertinent question is the estimate of time by which the second wave of COVID – 19 spread could be contained and normalcy would return. In this context, Prof. D. Narayana Rao, Pro Vice Chancellor, SRM University – AP initiated the study to predict the End-Time of COVID – 19 in the states of Uttar Pradesh, Delhi, Karnataka, Maharashtra, Andhra Pradesh, Tamil Nadu, Kerala & West Bengal. Dr. Soumyajyoti Biswas of SRM University – AP along with 4 B.Tech Students: Mr. Anvesh Reddy, Mr. Hanesh Koganti, Mr. Sai Krishna and Mr. Suhas Reddy have carried out an interesting study to predict the end time of second wave of COVID – 19 spread in these states. Study employed Susceptible – Infected – Recovered (SIR) Model making use of the information on the COVID – 19 affected people and the number of recovered people, the data which the state governments make them available. SRM Team made use of these data, employed SIR Model and applied the methods of Machine Learning. The End -Times of the spread of COVID-19 for different states are given in the following table:

States	Uttar Pradesh	Delhi	Karnataka	Maharashtra	Andhra Pradesh	Tamil Nadu	Kerala	West Bengal
End-time	May 27	May 28	July 1	July 13	July 16	July 26	August 12	September 2
Errors	-2 days, + 3 days	-2 days, + 2 days	- 6 days, + 5 days	-7 days, + 7 days	-16 days, + 28 days	-17 days, + 33 days	-14 days, + 14 days	-30 days, + 30 days

End-Time is defined as the date on which the number of COVID affected cases get reduced to 5% of the peak number of cases occurred in the particular state.

The model is also validated with the actuals occurred in the States of Delhi and Uttar Pradesh.

Delhi: **Peak of 28,935** was on 20th April 2021 and 5% of the peak number is 1490 and is predicted to **occur on 28th May with an error of -** 2 days to + 2 days

Actuals: 26th May: 1491
27th May: 1072
28th May: 1141

Uttar Pradesh: **Peak of 37,944** was n 24th April 2021 and 5% of the peak number is 1897 and is predicted to **occur on 27th May** with an error of -2 days to +3 days.

Actuals: 27th May: 3179
28th May: 2276
29th May: 2014
30th May: 1864

The validation mentioned of the end-times of the second wave of COVID-19 spread, increases our confidence level to the predictions made for other states also.

It can be noticed that in the States of West Bengal, Kerala, Tamil Nadu, and Andhra Pradesh, the second wave of COVID-19 continues to spread for longer periods and errors are large compared to the other states of Uttar Pradesh, Delhi, Karnataka and Maharashtra. Perhaps, these factors could be attributed to the large gatherings that have occurred in the 4 states on several occasions.

Prof Narayana Rao said that these predictions mentioned above could help in estimating the impact on medium and small business sectors. In the education sectors, it could help in planning the academic sessions, examinations etc. It could also help to plan necessary medical infrastructure for the healthcare in different states.

The details of the study can be found in [2105.13288] Machine learning predictions of COVID-19 second wave end-times in Indian states (arxiv.org)