COVID-19 TRACKER: INDIA

9 May 2021
This tracker\(^1\) has been developed by researchers at Cambridge Judge Business School and National Institute of Economic and Social Research, working with Health Systems Transformation Platform in India, as part of a pandemic monitoring series devoted to India and its states and union territories. It provides near term forecasts of the trajectory of the pandemic, identifying states and union territories that are at high risk of increases in infection incidence.

The forecasts are based on a structural time series model that uses historical data in estimation but adapts to the trend emerging in the most recent period. The model is described in the recently published paper by Andrew Harvey, Emeritus Professor of Econometrics at the Faculty of Economics of the University of Cambridge, and Paul Kattuman, Reader in Economics at Cambridge Judge Business School, entitled "Time series models based on growth curves with applications to forecasting coronavirus". *Harvard Data Science Review*, Special issue 1 - COVID -19.

*Indian states and union territories vary considerably in near term trajectories of COVID-19 cases.*

*Trend values of daily new cases are forecast to continue to increase over the next two weeks for: Tripura, Himachal Pradesh, Meghalaya, Manipur, Tamil Nadu, Jammu and Kashmir, Mizoram, Puducherry, Punjab, Nagaland, Assam and Odisha.*

*The filtered daily growth rates at the end of the observation period on 9 May exceeded 5% for: Tripura (implying a doubling time of 8 days), Manipur (doubling time of 11 days), Himachal Pradesh (12 days) and Meghalaya (14 days).*

The quality of forecasts rely on the quality of the published data. Further, near term changes in government pandemic policies, as well as transmission relevant social behaviour will realised numbers to depart from forecasts.

\(^1\) CJBS COVID-19 Tracker for India can be accessed at: [www.jbs.cam.ac.uk/covid-india](http://www.jbs.cam.ac.uk/covid-india)

The companion spreadsheet contains all the estimates and forecasts.

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Forecasts of daily new cases are for the period May 10 to 22, 2021, based on data till 9 May 2021.

The filtered trend in the growth rate of daily new cases. Final date: 9 May 2021.
$R_t$ as on 9 May 2021
Andhra Pradesh

- Data
- Forecast of new cases
- Forecast Trend

New Cases

- Apr 01
- Apr 15
- May 01
- May 15

Andhra Pradesh

- Growth rate of new cases

Growth rate of new cases

- Apr 01
- Apr 15
- May 01
- May 15
Manipur

- Data
- Forecast of new cases
- Forecast Trend

New Cases

0 1,000 2,000 3,000

Date
Apr 01 Apr 15 May 01 May 15

Manipur

Growth rate of new cases

0.0 0.1 0.2 0.3

Growth rate of new cases
Apr 01 Apr 15 May 01 May 15
Nagaland

- Data
- Forecast of new cases
- Forecast Trend

New Cases

Date

Apr 01  Apr 15  May 01  May 15

Growth rate of new cases

Date

Apr 01  Apr 15  May 01  May 15
Punjab

- Data
- Forecast of new cases
- Trend

Punjab

- Growth rate of new cases
Notes

Data: COVID-19 confirmed cases and deaths data are sourced from COVID19-India API: https://api.covid19india.org/


Forecast accuracy: When estimated with data up to May 2, the mean absolute percentage error of the forecasts for the 7 day period, May 3-9, is 6.1%. Forecast accuracy will in general be lower for the smaller states / union territories. It is important to pay attention to the confidence interval around the forecasts. The coverage of the interval presented is 50% implying there is 25% probability of the upper bound being exceeded.

New cases: growth rate. The filtered trends presented for daily growth rates of cases are estimated using the Kalman filter, applied to the observed series. The method filters out day of the week effects and random noise to reveal the underlying signal. Unlike methods such as the moving average, this method adapts the trend to changes in real time and characterises underlying patterns of surges or attenuations that are hidden in the volatile series. The method is described in the papers listed above.


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