COVID-19 CASES ANALYSIS

Abstract:

The outbreak of COVID-19 affected the lives of all sections of society as people were asked to self-quarantine in their homes to prevent the spread of the virus. The lockdown had serious implications on mental health, resulting in psychological problems including frustration, stress, and depression

Emergency warning signs

- Trouble breathing
- Persistent chest pain or pressure
- New confusion
- Trouble staying awake
- Pale, gray or blue-colored skin, lips or nail beds — depending on skin tone

Protecting others if you're ill

- Stay home from work, school and public areas unless it's to get medical care.
- Avoid using public transportation, ride-sharing services or taxis.
- Stay isolated in one room, away from your family, others and pets, as much as you can. Eat in your room. Open windows to keep air moving. Fans can help direct air out of windows.
- If you can't open windows, consider using air filters. And turn on exhaust fans in your bathroom and kitchen. You might also consider a portable air cleaner. Use a separate bathroom if you can.
- Avoid shared space in your home as much as you can. When using shared spaces, limit your movements. Make sure your kitchen and other shared spaces have good airflow.
- Clean often-touched surfaces in your separate room and bathroom, such as doorknobs, light switches, electronics and counters, every day.
- Avoid sharing personal household items, such as dishes, towels, bedding and electronics such as phones.

  Wear the most protective face mask that you'll wear regularly, fits well and is comfortable when near others or pets. Change the face mask each day

To care for yourself, follow these steps:

- Keep a daily routine, such as taking a shower and getting dressed.
- Take breaks from COVID-19 news and social media.
- Eat healthy meals and drink plenty of fluids.
- Stay physically active.
- Get plenty of sleep.
- Avoid use of drugs, tobacco and alcohol.
- Stretch, breathe deeply or meditate.
- Focus on fun activities.
- Connect with others and share how you are feeling.

Diagnosis and recovery curriculum

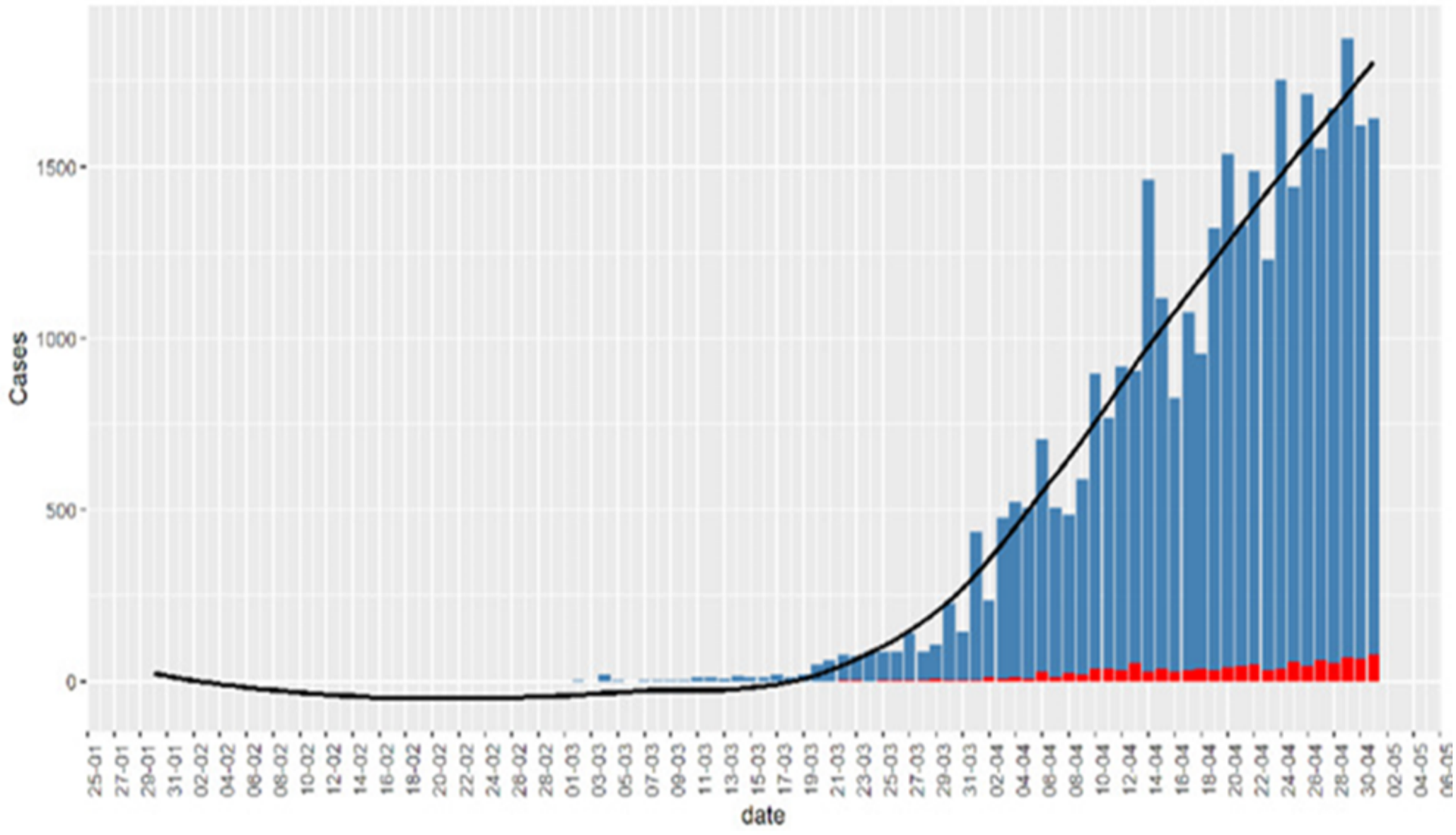
Wear a mask properly

To properly wear your mask:

- Make sure your mask covers your nose, mouth and chin.
- Clean your hands before you put your mask on, before and after you take it off, and after you touch it at any time.
- When you take off your mask, store it in a clean plastic bag, and every day either wash it if it’s a fabric mask or dispose of it in a trash bin if it’s a medical mask.
- Don’t use masks with valves.

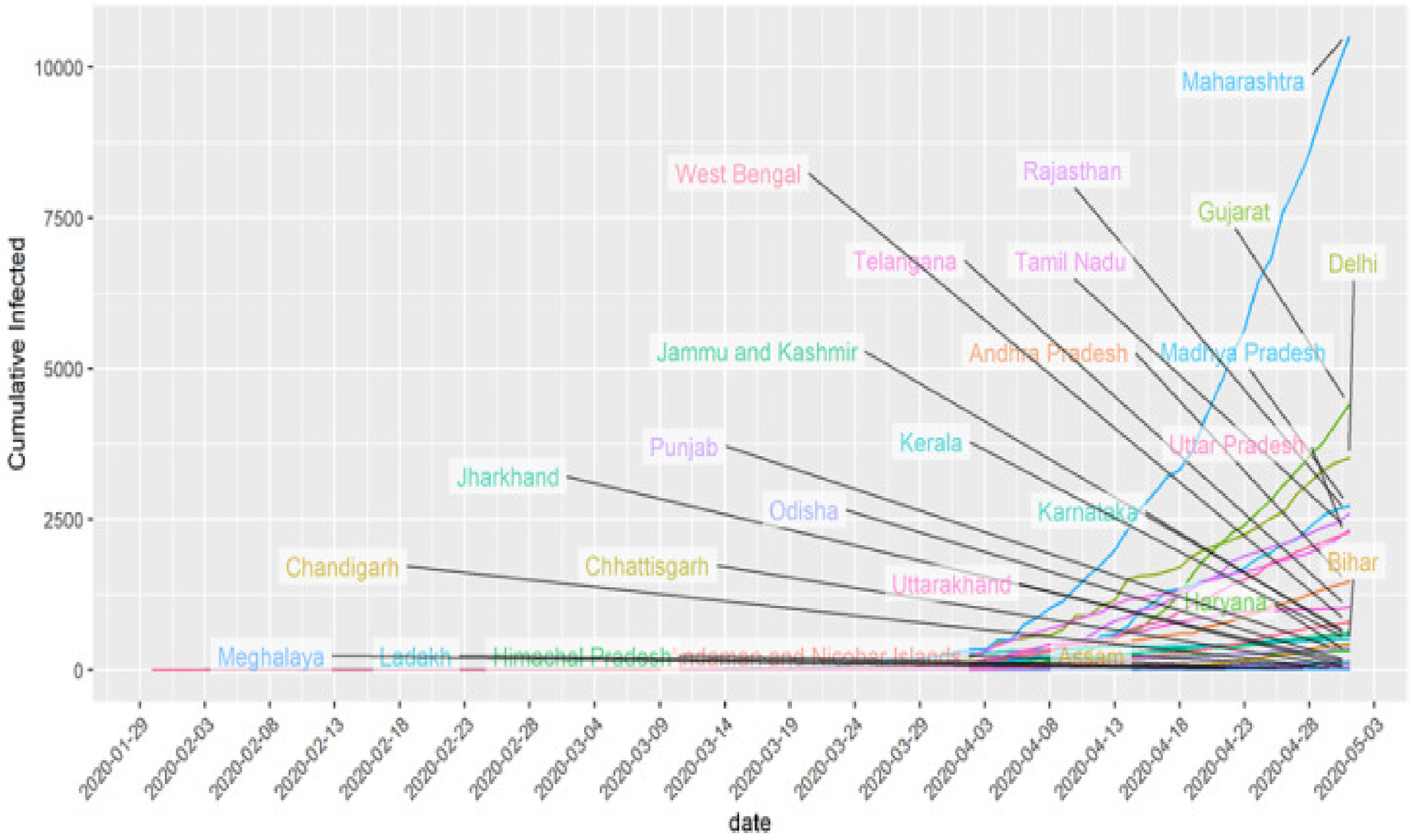
Make your environment safer

- Avoid the 3Cs: spaces that are **c**losed, **c**rowded or involve **c**lose contact.
- Meet people outside. Outdoor gatherings are safer than indoor ones, particularly if indoor spaces are small and without outdoor air coming in.
- If you can’t avoid crowded or indoor settings, take these precautions:
    - Open a window to increase the amount of natural ventilation when indoors.
    - Wear a mask
- We found that 7 states, namely, Maharashtra, Delhi, Gujarat, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, and West Bengal are in the severe category. Among the remaining states, Tamil Nadu, Rajasthan, Punjab, and Bihar are in the moderate category, whereas Kerala, Haryana, Jammu and Kashmir, Karnataka, and Telangana are in the controlled category.



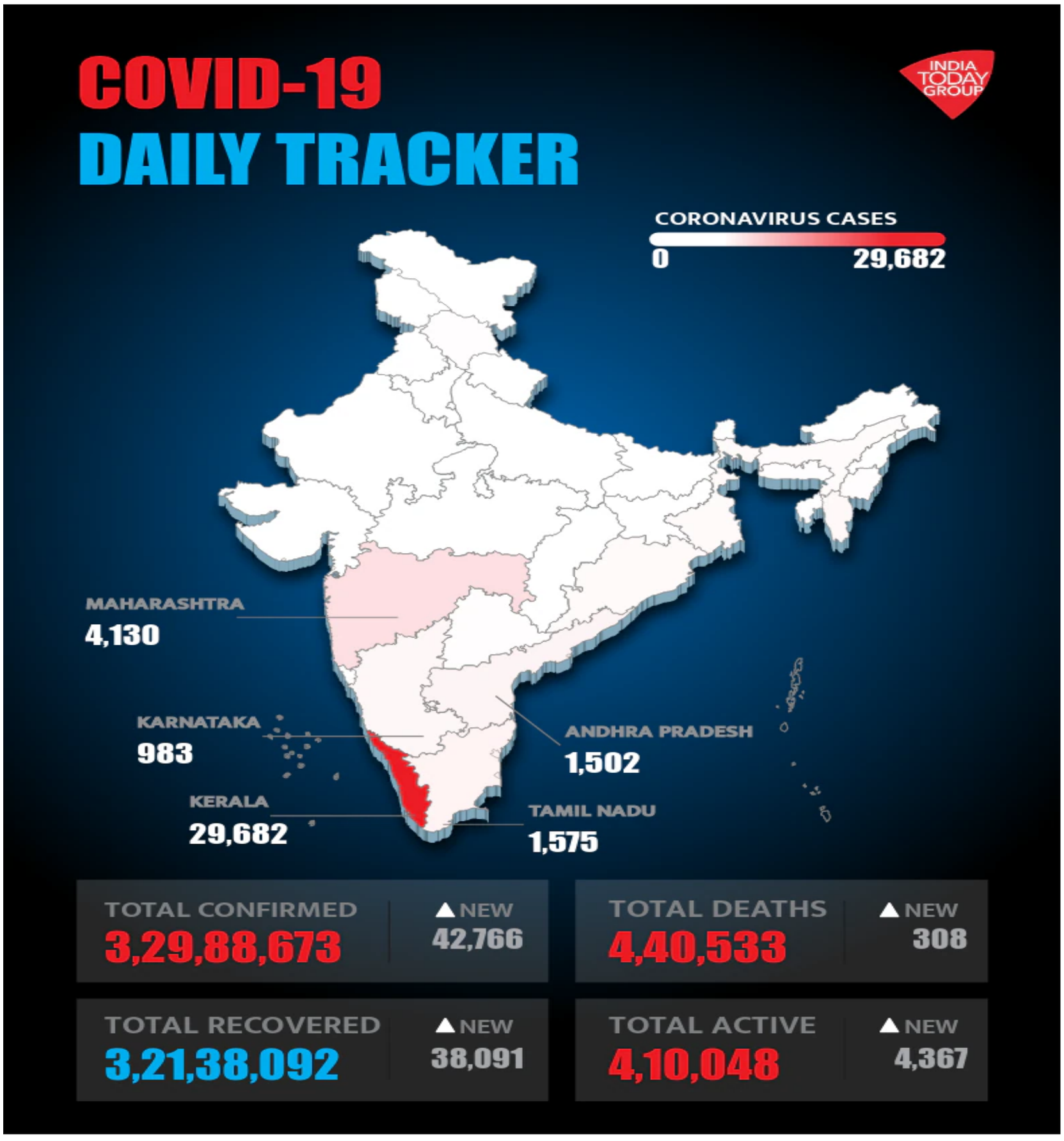
INDIA

Indian states having at least 10 total infected people. Currently, Maharashtra, Delhi, Gujarat, Tamil Nadu, Madhya Pradesh, Rajasthan, and Uttar Pradesh are the states where the cumulative number of infected people have crossed the 2000 mark, with Maharashtra having more than 10,000 cases. Kerala, the first state to have a COVID-19 confirmed case, seems to have restricted the growth rate. There are few states with cumulative infected people in the range of 500-1500. Depending on how those states strictly follow the preventive measures, we may see a rise in the confirmed cases.



TAMIL NADU

The cumulative infected cases in Tamil Nadu is 2323. The state has observed a high DIR of more than 0.7 for some days in March. Tamil Nadu is one of the states where the effect of lockdown is visible from the declining DIRs from the beginning to the end of April. However, there was again an increasing trend in DIR over the last 3 days. The DIRs were between –0.13 and 0.12 over the previous 2 weeks. The latter part of the curve (red line, fourth panel) of observed active infected patients is showing a decreasing trend first but then an increasing trend again. The estimated R_0 for this southern state obtained from the fitted SIS model is 3.22, which is quite high. The preventive measures need to be maintained to bring down the active cases as well as to stop new infections in this state.



Preventive Measures:

- Increase of quarantine/isolation facilities
- Travel restrictions
- Visa restrictions: gradually for different countries.

1. Data Extraction - Converted the data from Israel Language to English.

2. Data Preprocessing - Label, One Hot Encoding & Eliminated ambigious records using risk coefficient.

3. Exploratory Data Analysis - Used Tableau & Plot.

4. Feature Selection - Applied Chi Square test. All features were classified as important.

5. Data Modeling - Undersampling Majority Class & 70-30 split as Train - Test Split. Applied Grid Search Cv for all 3 models.

6. Model Evaluation - Calculated all the metrics using Confusion Matrix.

		Train Data					Test Data				
SR. No	Model Name	Recall	Specificity	Accuracy	Precision	F1 Score	Recall	Specificity	Accuracy	Precision	F1 Score
1	Logistic Regression	99.84	96.4	97.69	94.34	97.01	99.87	96.44	97.72	94.37	97.04
2	Random Forest	99.98	96.39	97.73	94.32	97.06	99.96	96.42	97.74	94.35	97.07
3	XgBoost	99.94	96.41	97.73	94.35	97.06	99.92	96.44	97.75	94.39	97.08