

Covid19AnalysisInIndiaReport

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INTRODUCTION

The first cases of COVID-19 in India were reported on 30 January 2020 in three towns of Kerala, among three Indian medical students who had returned from Wuhan, the epicenter of the pandemic. The number of Coronavirus cases have been increasing rapidly in India since then. Millions of data exist recording the number of cases and deaths due to Covid. Apart from that, there is data regarding the testing for Coronavirus. Covid 19 was declared as a pandemic due to it's exponentially rising number of cases. Covid 19 is an infectious disease which is caused by the SARS-CoV-2 virus and affects our respiratory system. The aim of the project is to analyse the trends in Covid-19 cases in India from January,2020 to January,2021. I have used the programming language R to visualise and compare the number of cases, cured cases and deaths. Apart from this, visualization of the testing data has also been done. The project has two datasets, covid_19_india.csv and StatewiseTestingDetails.csv which have been downloaded from Kaggle.

DATASET

Dataset	Dimensions	Description
covid_19_india	9 columns and 18110 rows	Contains the state-wise information about the number of case, deaths and recoveries each day.
StatewiseTestingDetails	5 columns and 16336 rows	Conatins the state-wise tests conducted, positive and negative results per day.

Table1: Datasets for Covid19

Dataset	Variable	Type(w.r.t Statistics)	Type (w.r.t Computer Science)	Description
covid_19_india	Date	Discrete	Date	The date when the covid 19 cases are counted ranging from 2020-01-01 to 2020-12-31
	State.UnionTerritory	Nominal Categorical	String	Different States and Union Territories in India
	Cured	Numeric Count	Integer	Number of Indians who recovered, taking values between 0 and 6159676
	Death	Numeric Count	Integer	Number of Indians who died, taking values between 0 and 134201
	Confirmed	Numeric Count	Integer	Number of Indians suffering from Covid, taking values between 0 and 6363442
StatewiseTestingDetails	Date	Discrete	Date	The date when individuals were tested for Covid.
	State	Nominal Categorical	String	Different States and Union Territories in India
	TotalSamples	Numeric Count	Integer	Total number of tests for Covid taking values between 58 and 67897856
	Negative	Numeric Count	Integer	Number of tests having negative results taking values between 0 and 83561026.
	Positive	Numeric Count	Integer	Number of tests having positive results taking values between 0 and 1638961.

Table2: Variable Description

VISUALIZING THE DATA

Fig1 represents the number of Covid cases,cured and deaths in each state from 1st April, 2020 to 10th August, 2021. The figure also depicts the total number of samples that were tested for Covid and the number of samples which had either Positive or Negative result. Each variable is represent by a distinct colour as shown in the legend. From the plot it is clear that the maximum number of cases was observed in Maharashtra.

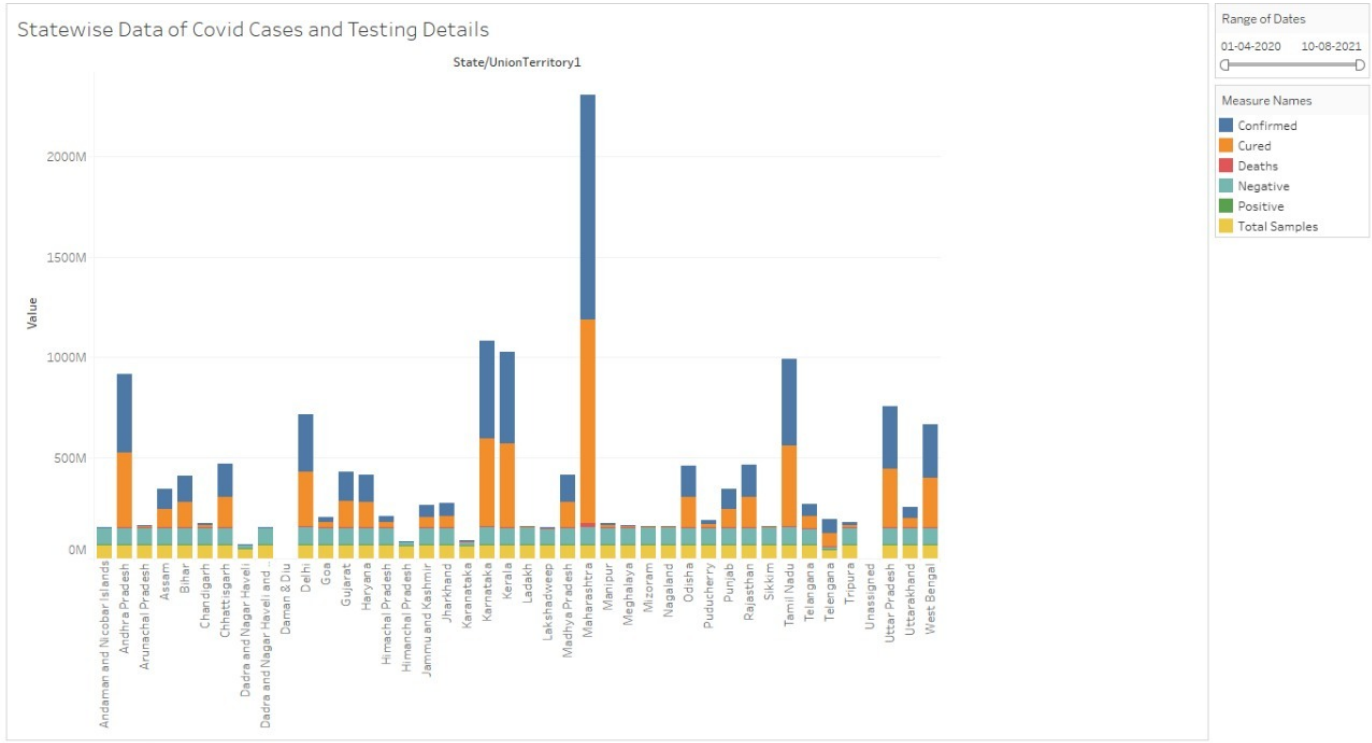


Fig1: Statewise Data of Covid Cases and Testing Details

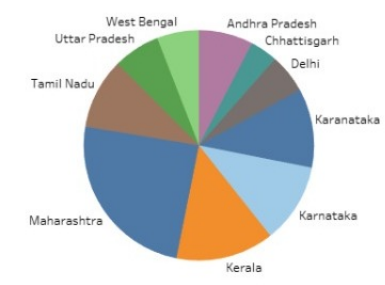


Fig2: Confirmed Cases of Top 10 States

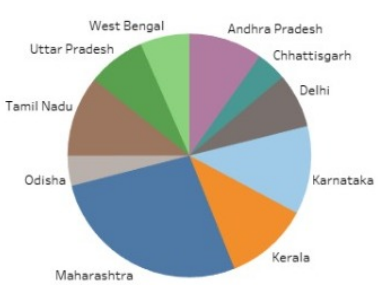


Fig3: Cured Cases of Top 10 States

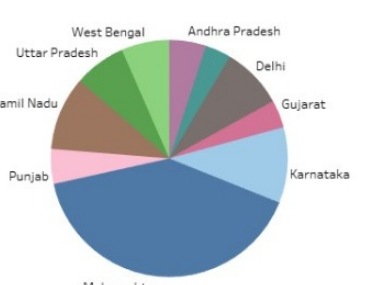


Fig4:

The above three are pie charts depicting the number of confirmed cases. cured cases and deaths of the Top 10 States/Union Territories. We can see as concluded previously, Maharashtra is occupying a major portion of the pie in all the three figures. It can also be observed that Karnataka is following Maharashtra showing a similar trend in its numbers. Kerala, being a state with many number of confirmed cases surprisingly is not among the top 10 States for the number of Deaths.

Monthly trends of Covid Cases

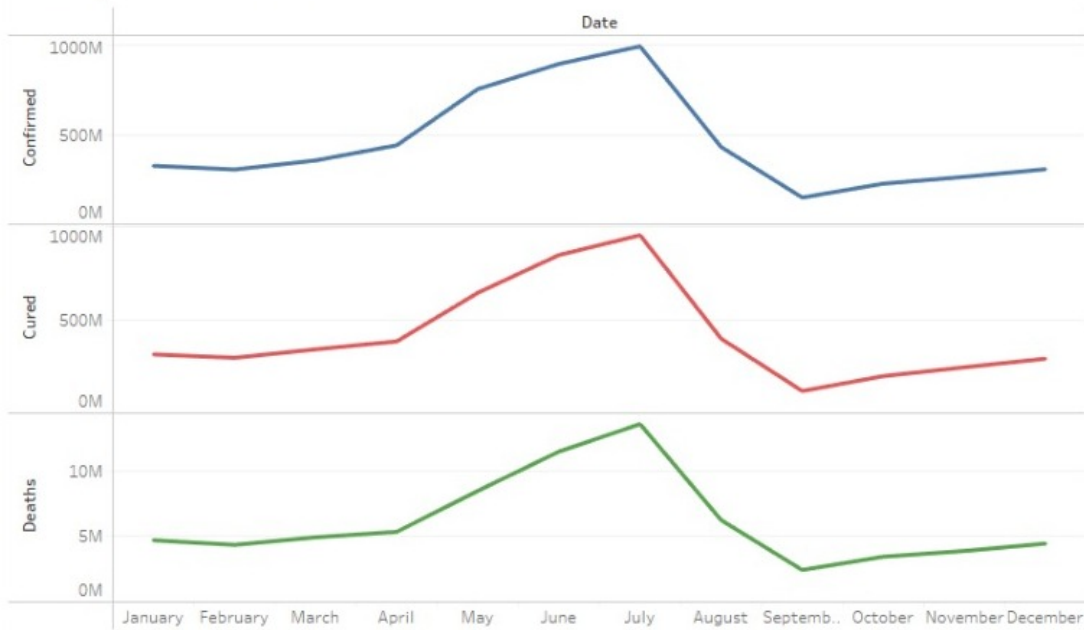


Fig5: Monthly trends in Covid Data

Since March, the number of cases, deaths and cured cases had been increasing rapidly, we can see the three variables reach a peak in July, 2020 but then start decreasing sharply. But then after September there is again an increase in numbers.

In Fig6 we can observe a similar trend, note that the number of samples keep on increasing with each month. We can see as the number of cases increased, the number of positive samples also increased.

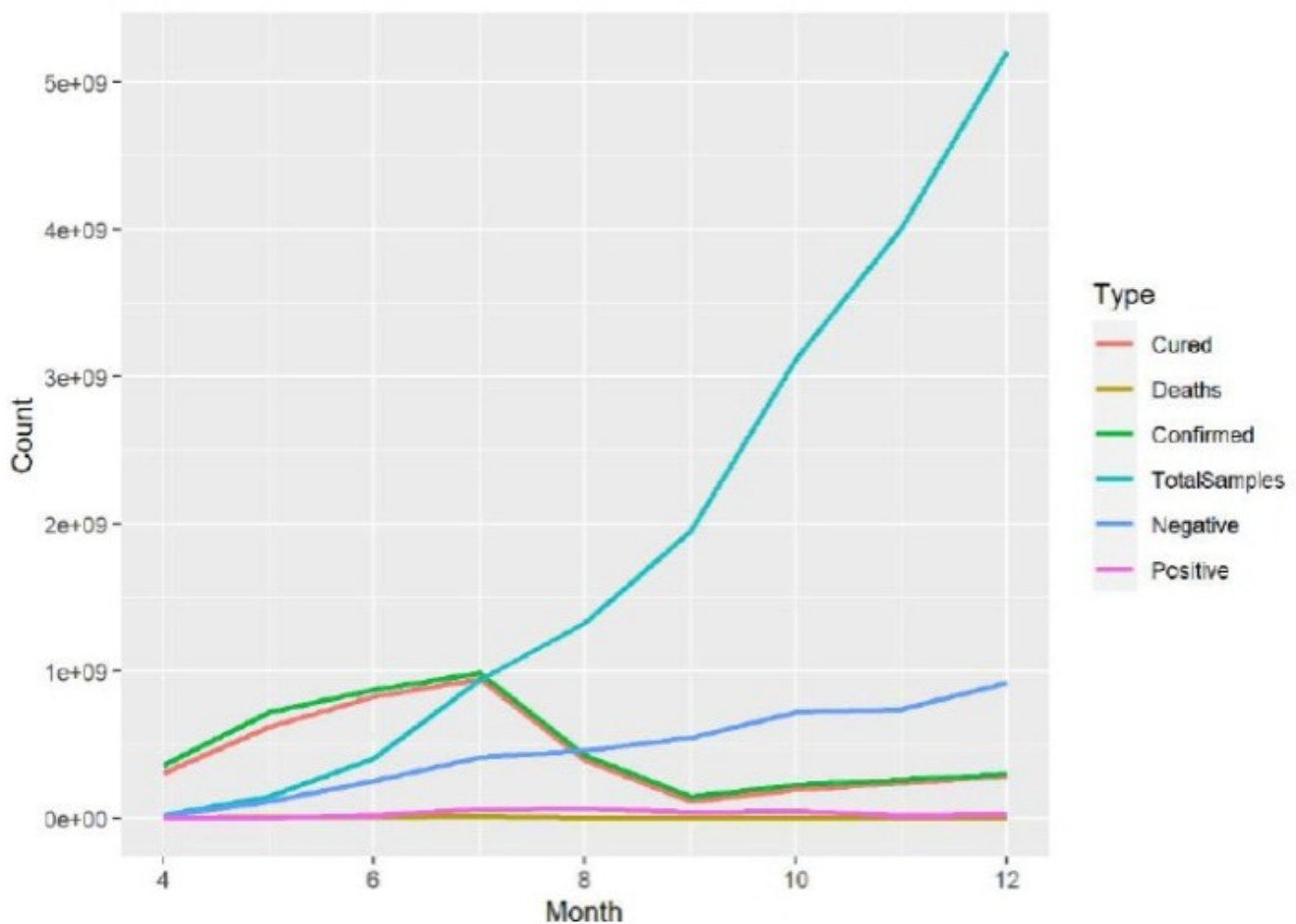


Fig6: Statewise Data of each month

CONCLUSION

The first Covid 19 case was observed in January,2020 in Kerala and testing started in April,2020. These numbers kept on increasing and were maximum during the months May to July. Initially no tests were being conducted, but later on the number of tests conducted increased sharply during the end of the year. Though there was a decrease in the number of Covid cases and Deaths towards the end. Most of the people suffering from Covid recovered as seen by the linear correlation between the two variables. The number of Deaths initially increased sharply but later on started decreasing. From the above plots we can conclude that Maharashtra observes the highest number of Covid 19 Cases,deaths and recoveries followed by Karnataka in the year 2020. Rest of the states though had high values but had numbers even less than Maharashtra. Maharashtra was also among one of those states which had the maximum number of positive results for the tests followed by Kerala. We can conclude that with time as the number of tests increased the total number Covid 19 cases kept decreasing. Also in Maharashtra there was a sharp fall in the number of cases, though this didn't last long and further increased. All the States and Union Territories of India were badly affected during the middle of the year. From the geographical map we can see, States in the southern part of India were among the top States with maximum number of Covid19 cases. The north-eastern part of India was fairly protected by the virus as can be seen with its low numbers.

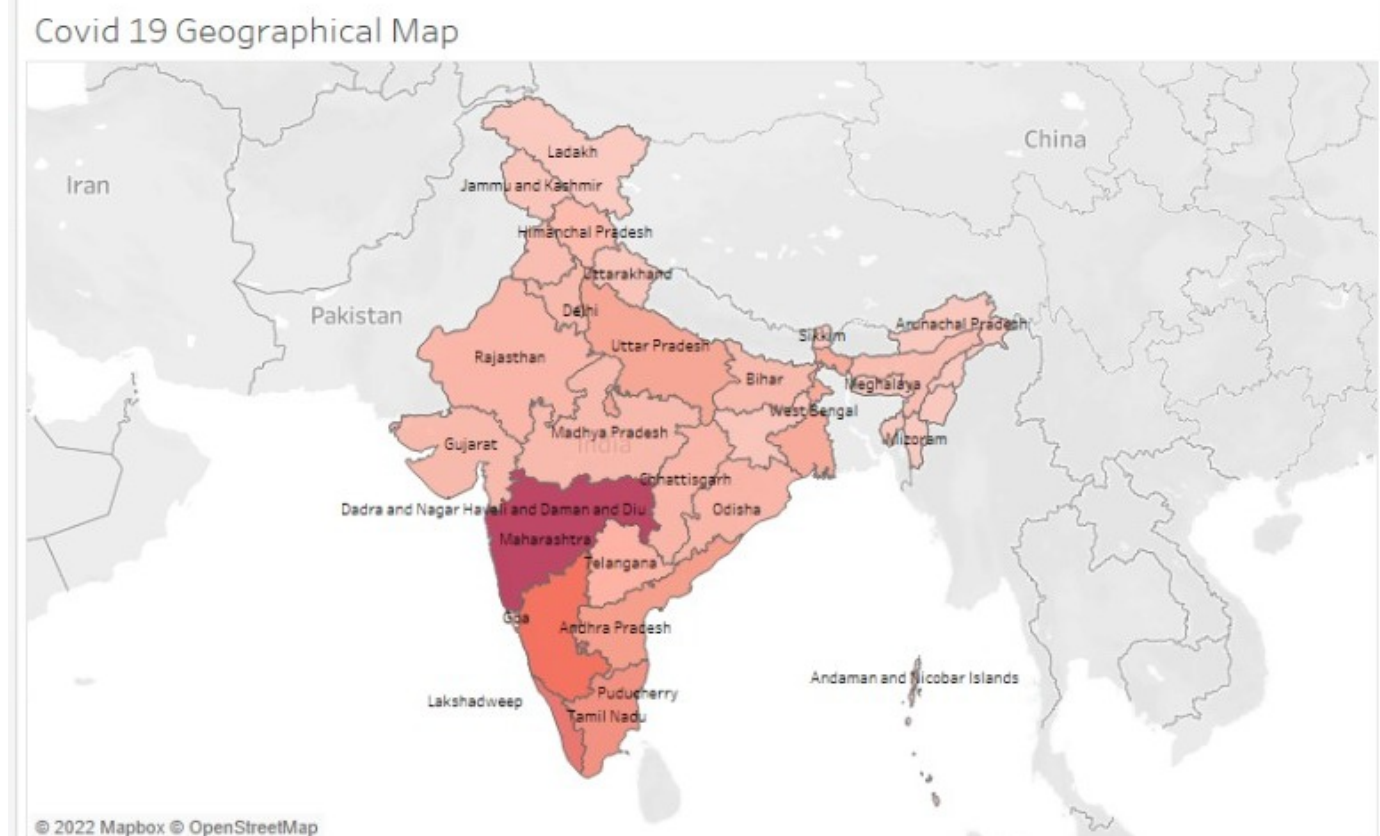


Fig7: Geographical Map of India

References

1. RShiny Dashboard to visualize the trends: <https://suchetajjw.shinyapps.io/Covid19Dashboard>
(<https://suchetajjw.shinyapps.io/Covid19Dashboard>)
2. YouTube Video to understand the plots: <https://youtu.be/28dVqDd73Vk> (<https://youtu.be/28dVqDd73Vk>)
3. GitHub Repository for the code: https://github.com/SuchetaJ/Covid19_Analysis_In_India
(https://github.com/SuchetaJ/Covid19_Analysis_In_India)