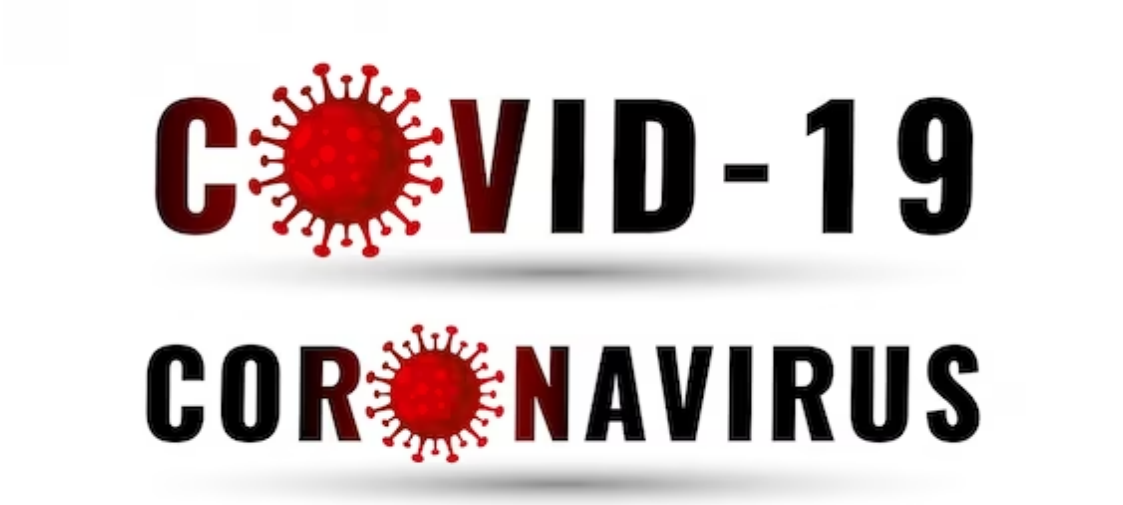
SMARTBRIDGE EXTERNSHIP PROGRAM - DATA ANALYTICS - PROJECT

# COVID-19 DATA ANALYTICS DASHBOARD USING TABLEAU

## JUNE 2023 -VIT VELLORE - TEAM 487




### Team Members

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### Dataset Used

> [https://drive.google.com/file/d/1bM4xqjoJA6vdM9oyrjBs58HB2dU7aNrd/view?usp=drive_link](https://drive.google.com/file/d/1bM4xqjoJA6vdM9oyrjBs58HB2dU7aNrd/view?usp=drive_link)
>
> Our dataset contains data of the timeframe : January 2020 to March 2020

# 1. Introduction

## 1.1 Overview

Our project is a comprehensive analysis of COVID-19 using Tableau software. It focuses on the time period of January 2020 to March 2020 and aims to provide insights into the spread and impact of the virus during that time frame.

The project incorporates 10 different visualizations, each designed to highlight specific aspects of the COVID-19 data. These visualizations include charts, graphs, maps, and other visual representations, all created using Tableau's powerful visualization capabilities.

To present the findings in a cohesive manner, we have developed a dashboard that brings together the various visualizations into an interactive interface. This dashboard allows users to explore the data and gain a comprehensive understanding of the COVID-19 situation during the specified time period.

Furthermore, our project includes a storytelling component, where we have crafted a narrative that guides the audience through the analysis process. This storytelling aspect helps to effectively communicate the key insights and trends discovered in the COVID-19 data.

Overall, our project provides a holistic view of COVID-19, examining its spread, impact, and trends during the early months of the pandemic. By leveraging Tableau's capabilities, our analysis and visualizations offer valuable insights that can inform decision-making, raise awareness, and contribute to the understanding of the pandemic's progression.

## 1.2 Purpose

The purpose of our project on COVID-19 analysis using Tableau software, with 10 different visualizations, a dashboard, and a story, is to gain insights and understanding into the spread and impact of the virus during the time period of January 2020 to March 2020. By analyzing the available data and presenting it visually, our project aims to achieve the following:

**Identify Patterns and Trends:** Through the visualizations and analysis, we can identify patterns and trends in the COVID-19 data. This includes tracking the spread of the virus across regions, identifying areas with high case counts, and observing changes in infection rates over time.

**Assess the Impact:** Our project allows for an assessment of the impact of COVID-19 during the specified time frame. This includes understanding the severity of the virus, examining mortality rates, and evaluating the strain on healthcare systems.

**Inform Decision-Making:** The insights gained from our project can inform decision-making processes. By visualizing the data, policymakers, public health officials, and researchers can gain a better understanding of the situation and make informed decisions regarding interventions, resource allocation, and public health measures.

**Communicate Findings Effectively:** Through the dashboard and story we created, we can effectively communicate the key findings and insights derived from the COVID-19 data. This helps in raising awareness among the general public, stakeholders, and decision-makers about the impact of the virus during that specific time period.

**Contribute to Knowledge and Research:** By conducting this analysis and presenting the results, our project contributes to the collective knowledge and research surrounding COVID-19. The insights gained can serve as a valuable resource for further studies, comparisons with future data, and understanding the progression of the pandemic.

Overall, the purpose of our project is to have informed decision-making, raise awareness, and contribute to the broader understanding of the pandemic.

## 2. Literature Survey

### 2.1 Existing Problem

The existing problem in your project revolves around analyzing and understanding COVID-19 data for the time period of January 2020 to March 2020 using Tableau. The challenge lies in extracting meaningful insights from the data and effectively communicating those insights through visualizations and storytelling.

### 2.2 Proposed Solution

**Documentation and Analysis:** Document the process and steps to be taken to analyze the COVID-19 data using Tableau. Detail the methodologies to use, including data sources, cleaning and preprocessing techniques, and any assumptions to make during the analysis.

**Visualizations:** Showcase the 10 different visualizations we plan to create using Tableau. Highlight the key insights and trends depicted in each visualization, explaining how they contribute to a better understanding of the COVID-19 situation during the specified time frame.

**Dashboard:** Create and present the dashboard, which brings together multiple visualizations into a cohesive and interactive interface. Explain the rationale behind the design choices made for the dashboard and how it provides a comprehensive overview of the COVID-19 data.

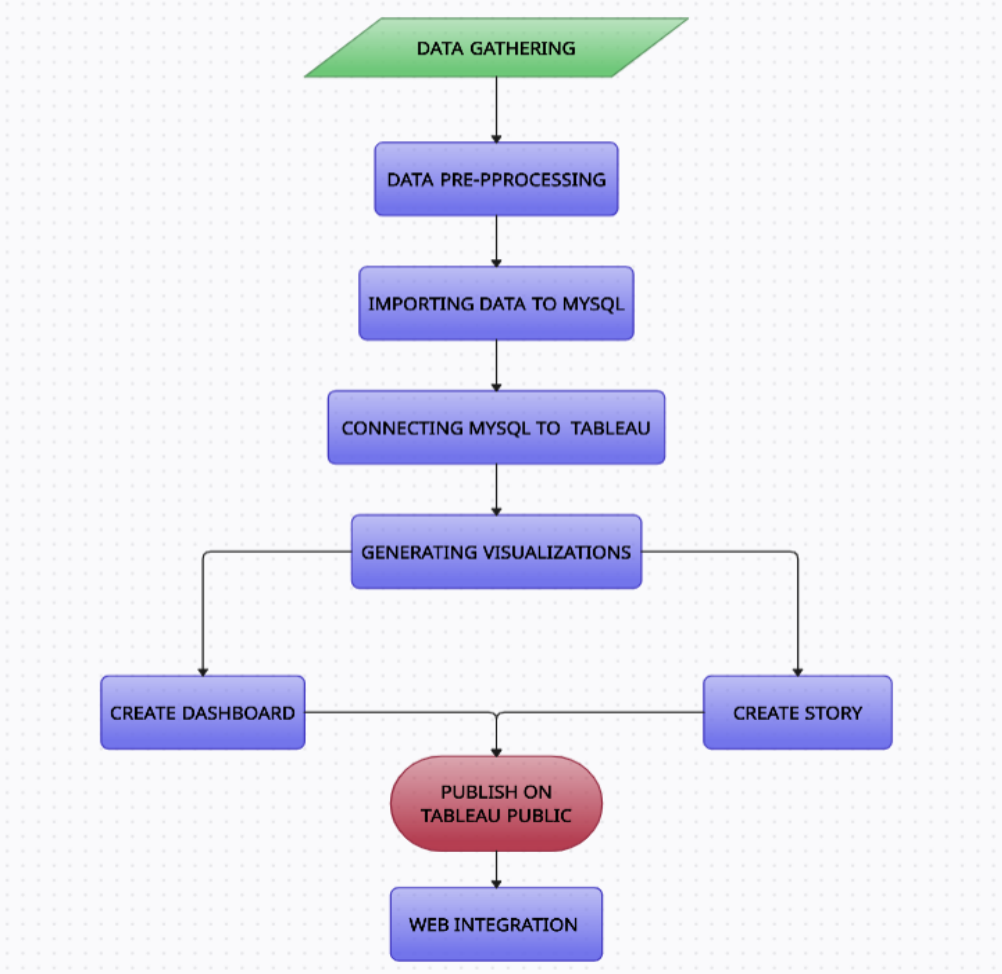
**Storytelling:** Create and share the story you crafted using Tableau, which narrates the progression and impact of COVID-19 during the specified time period. Discuss the flow of the story, including the key moments and insights highlighted, and how it guides the audience through the analysis process.

**Findings and Insights:** Summarize the significant findings and insights obtained from your analysis. Discuss any patterns, correlations, or anomalies discovered in the data, emphasizing their implications and potential for informing public health strategies or decision-making.

**Share the findings:** Share the Dashboard and Story to Tableau Public. Perform Web Integration using Bootstrap and Flask and share the links**.**

## 3. Theoretical Analysis

### 3.1 Block Diagram



### 3.2 Hardware/ Software Designing

MS Excel to view the excel data. MySQL to load the data in the database. Need Tableau Software installed on Desktop. Need to have an account on Tableau Public. No hardware requirement.

## 4. Experimental Investigations

Analysis through various visualizations are made. We investigated the distribution of confirmed, cured and deaths across all the states of India for the given time period. We made use of various different kinds of charts to gain multiple insights.

## 5. Flowchart/Procedure

**5.1** Data Gathering **:** Obtaining the data file.

**5.2** Data Cleanup: Cleaning data, removing incomplete or inaccurate data.

**5.3** Importing data to MySQL

**https://drive.google.com/file/d/1hkQjE4-oHPbKdevosBqCCjjPhuY7Bv2P/view?usp=drive_link**

**5.4** Connecting MySQL data to Tableau

**https://drive.google.com/file/d/1K-2Dsd4z2Rb1CXnzDynkKUlnHHx7cV1v/view?usp=drive_link**

**5.5** Generating suitable visualizations

**5.6** Creating a dashboard

**https://drive.google.com/file/d/1eJxIGWTzunNhWSCwgVPOZkklZM2VbNU3/view?usp=drive_link**

**5.7** Creating a story

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**5.8** Publishing the dashboard and story on Tableau Public

**https://drive.google.com/file/d/1G2Xe71w8SEZpUfSxra5G2kNj9Dx_ayzQ/view?usp=drive_link**

**5.9** Web Integration using bootstrap and flask

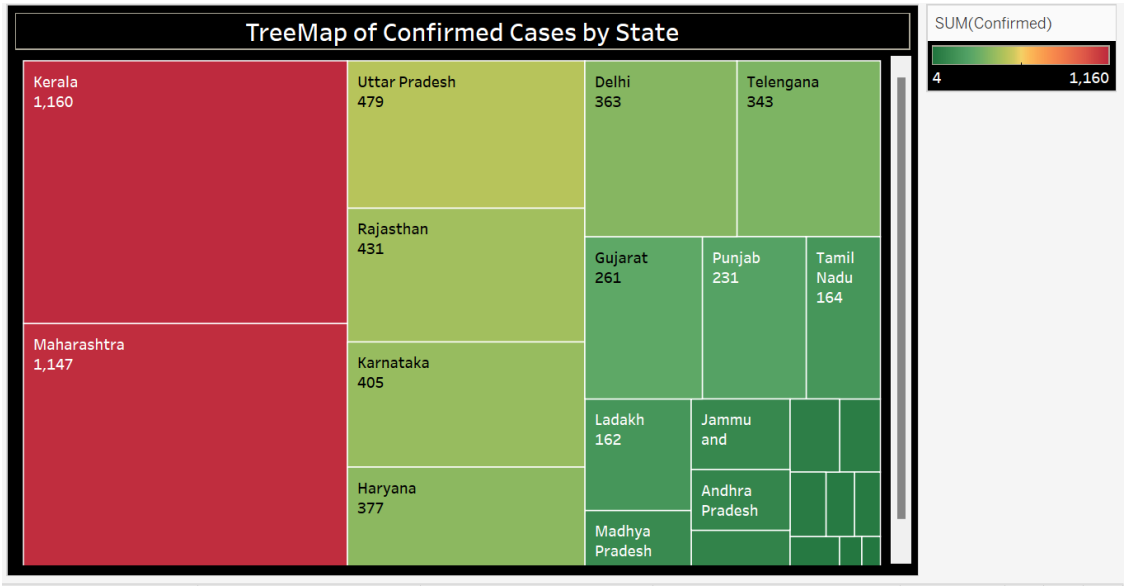
**https://drive.google.com/file/d/1uB3Qvzu9LbRl4r25VXhklpJOtsvIbbws/view?usp=drive_link**

**5.10** Preparing well-oriented project report documenting all steps

## 6. Result

Findings of the project with Screenshots and Explanatory Video

### Visualization - 1: TreeMap

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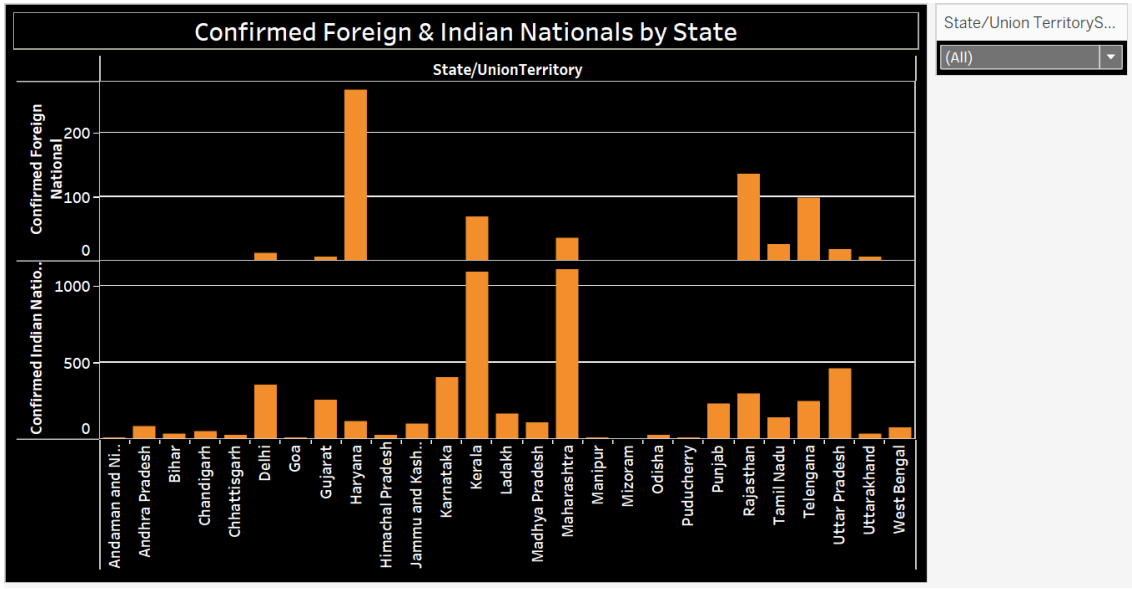
### Visualization - 2: Dual Vertical Bar Chart

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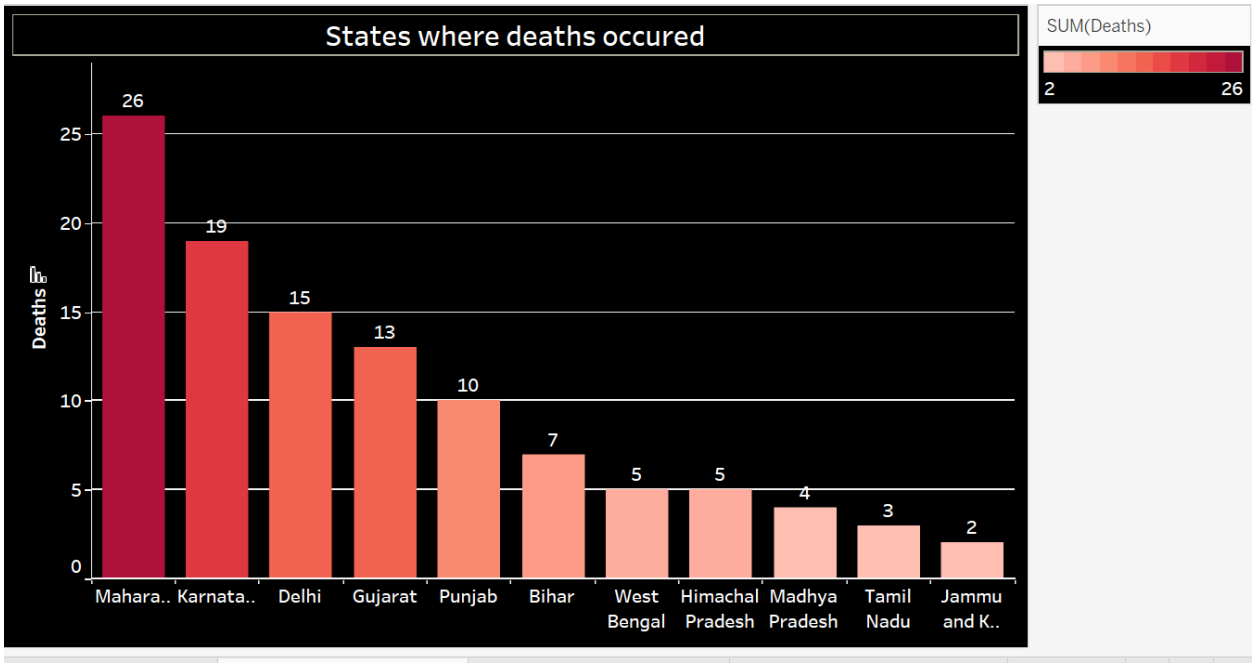
## Visualization - 3: Vertical Bar Chart

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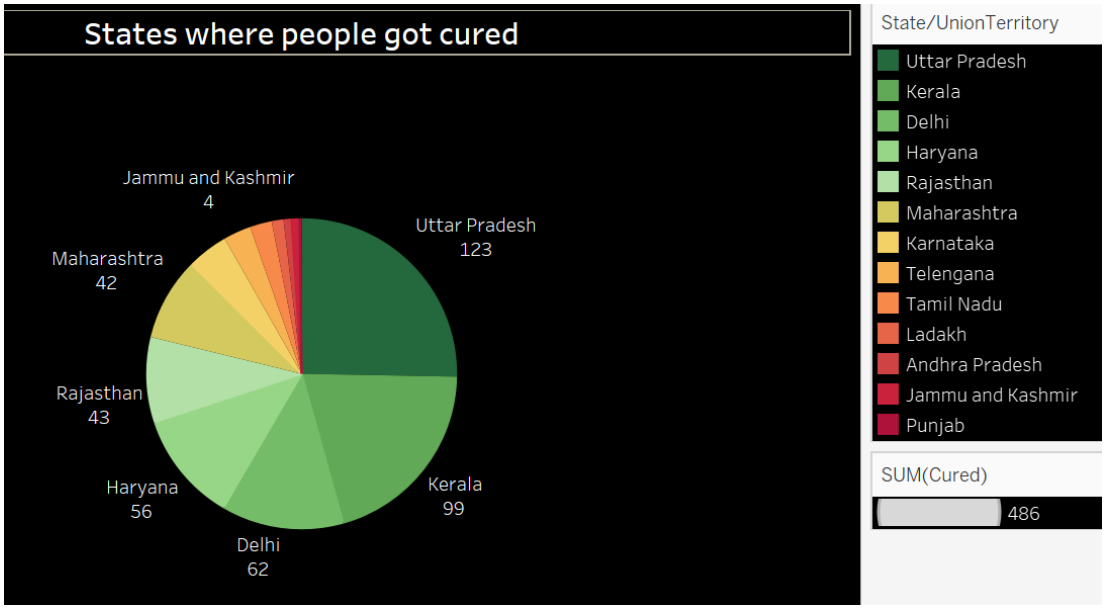
## Visualization - 4: Pie Chart

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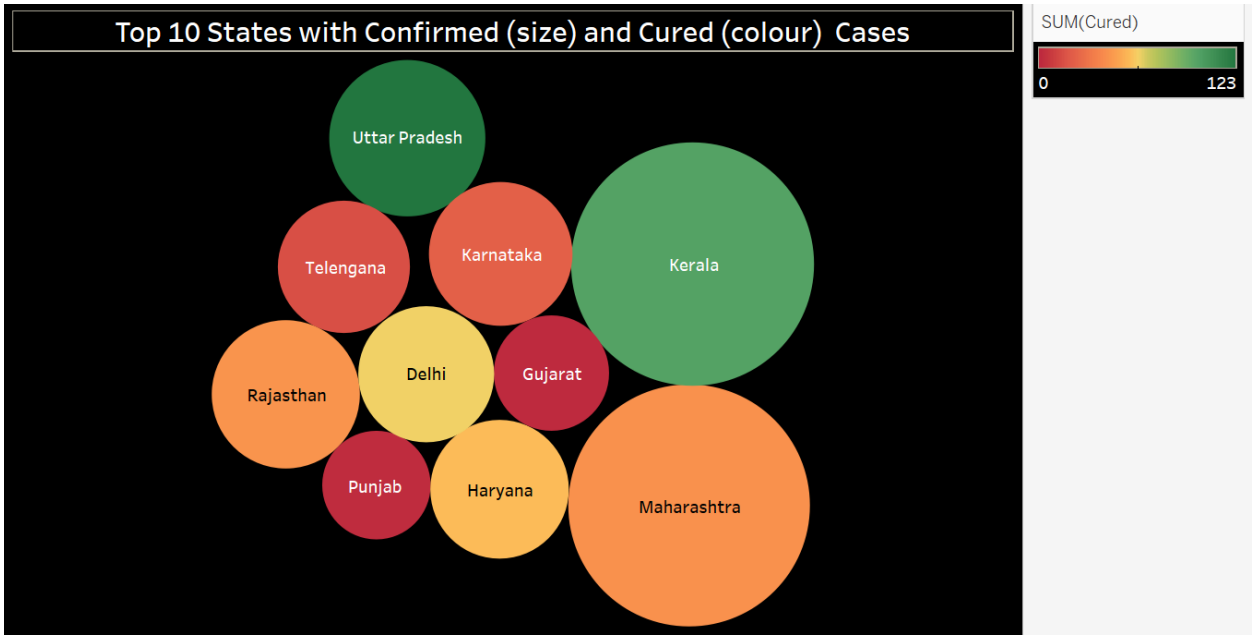
## Visualization - 5: Bubble Chart

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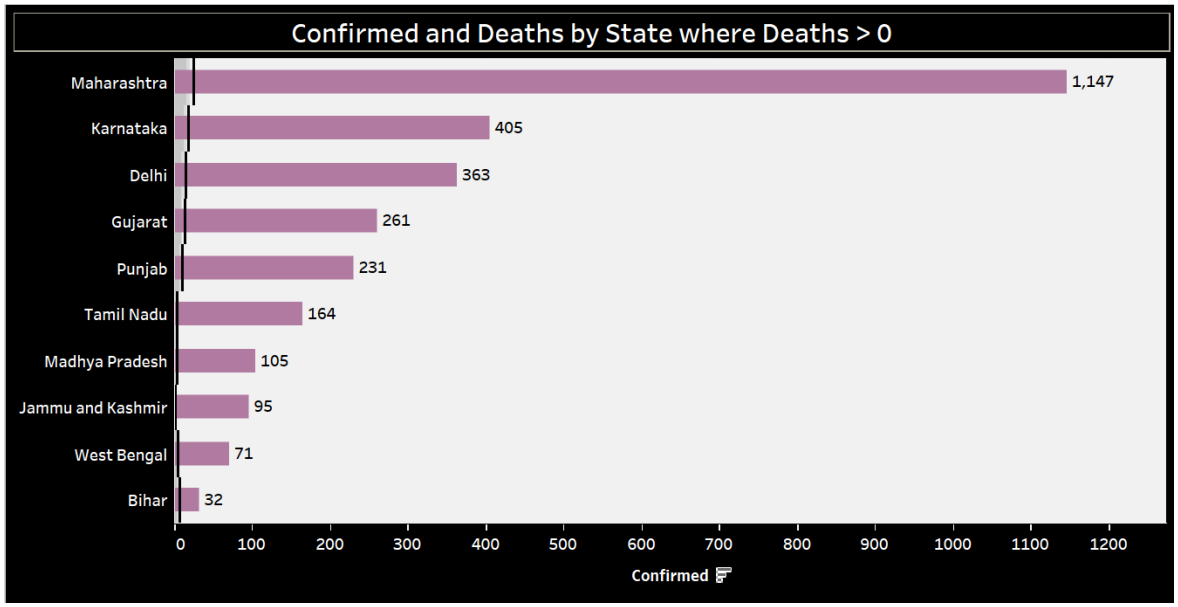
## Visualization - 6: Bullet Graph

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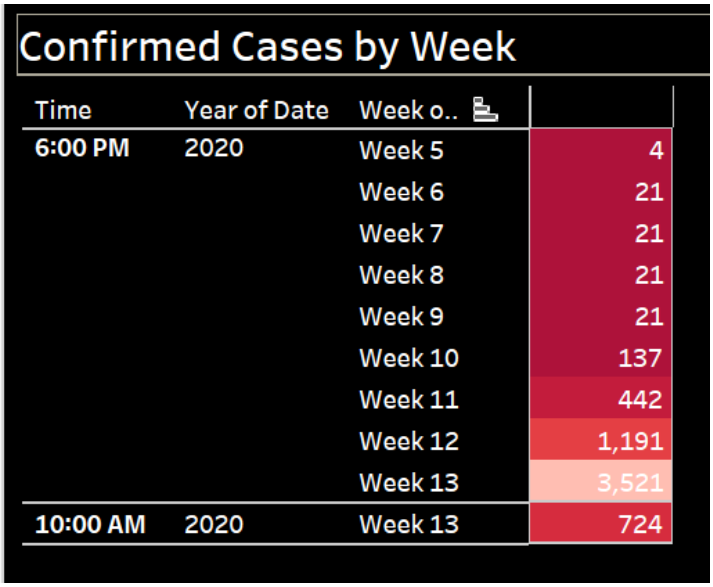
## Visualization - 7: Highlight Table

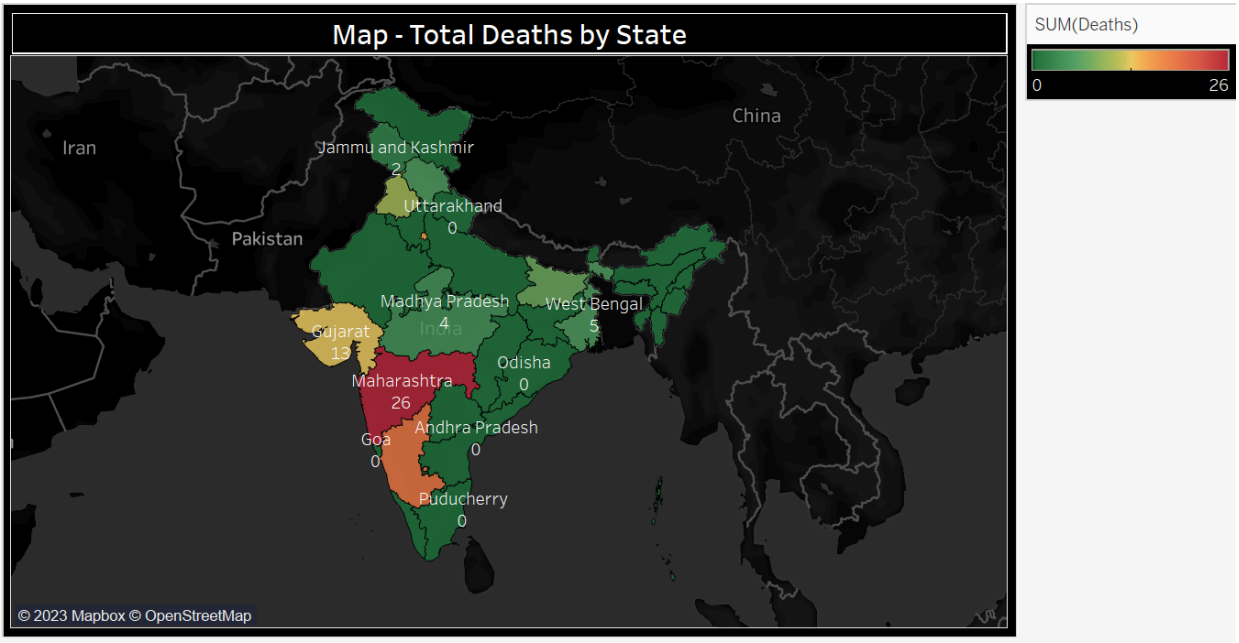


Confirmed Cases by Week

| Time | Year of Date | Week o.. | |
|---|---|---|---|
| 6:00 PM | 2020 | Week 5 | 4 |
| | | Week 6 | 21 |
| | | Week 7 | 21 |
| | | Week 8 | 21 |
| | | Week 9 | 21 |
| | | Week 10 | 137 |
| | | Week 11 | 442 |
| | | Week 12 | 1,191 |
| | | Week 13 | 3,521 |
| 10:00 AM | 2020 | Week 13 | 724 |

https://drive.google.com/file/d/1RAA9WVd6AEk7gFv1khHCbNMzDoNbwJQl/view?usp=drive_link

## Visualization - 8: Map

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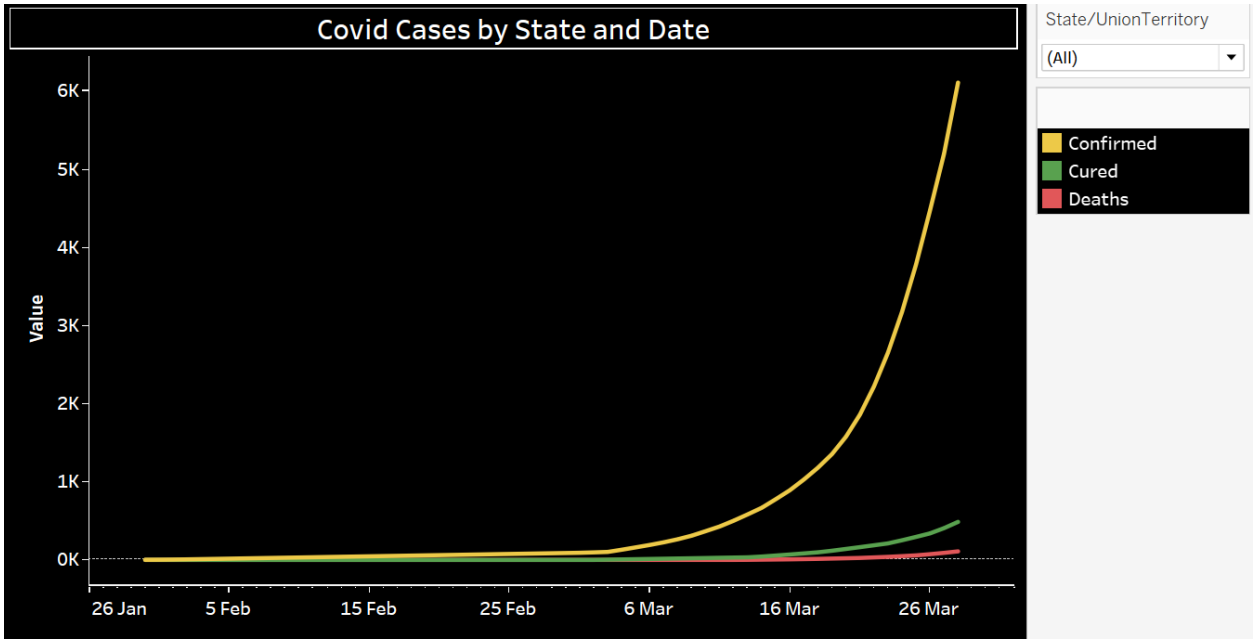
## Visualization - 9: Multiple Line Chart

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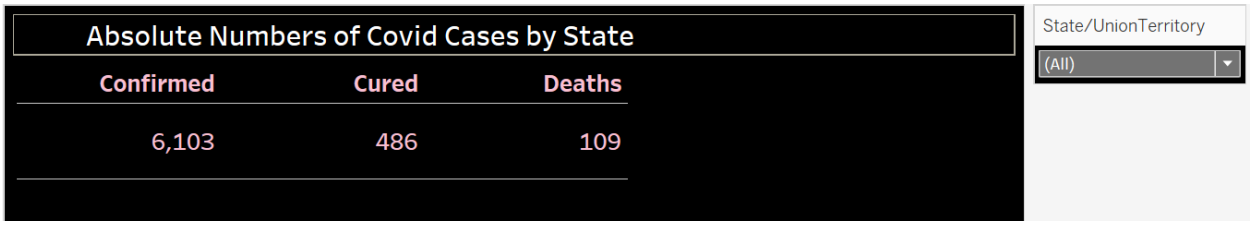
## Visualization - 10: Text Table

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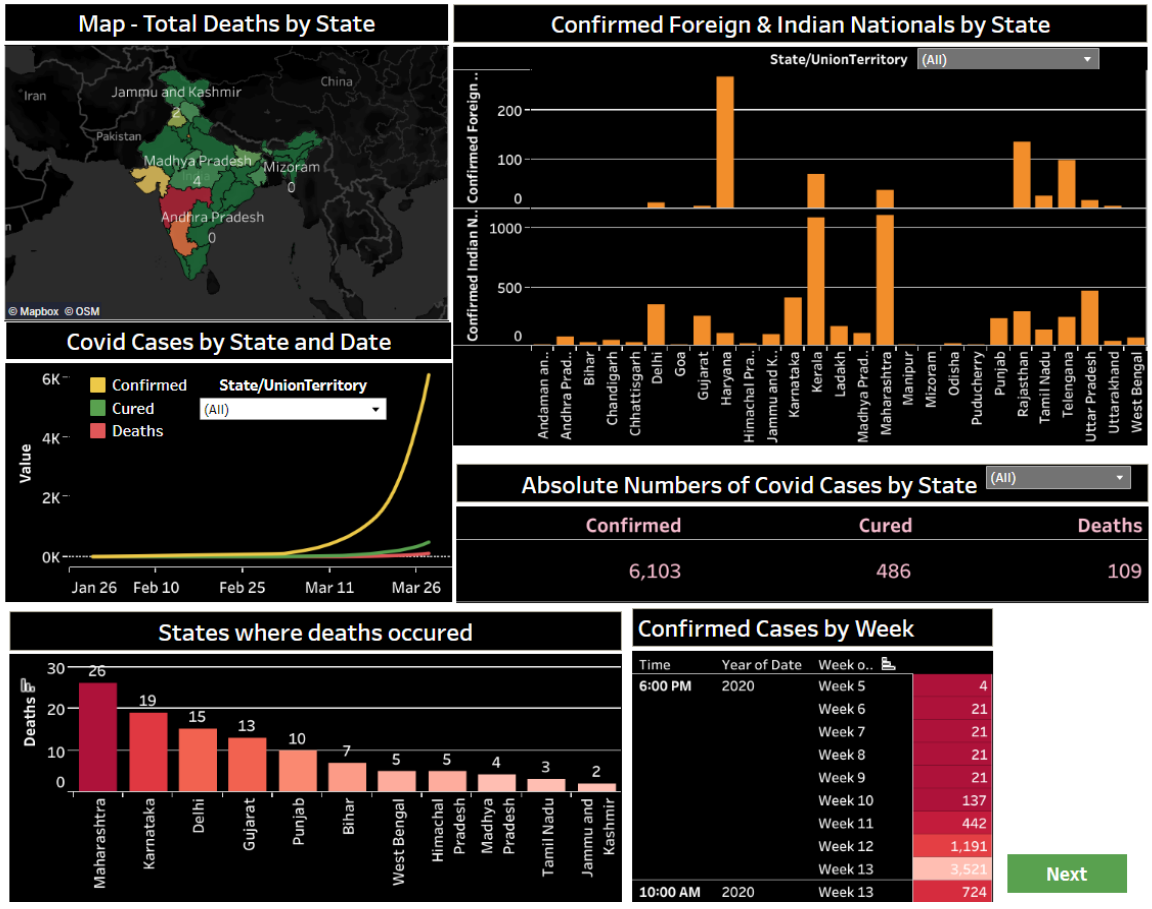
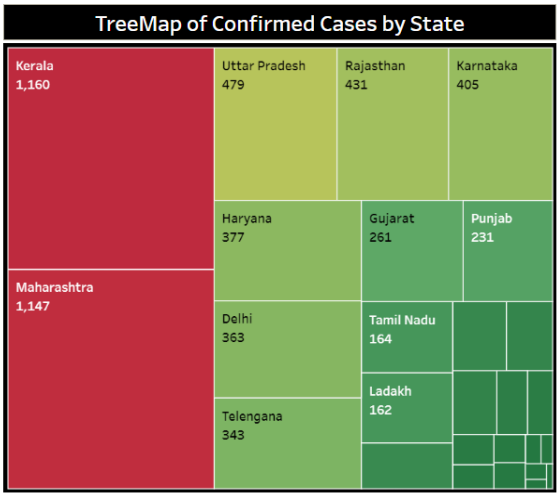
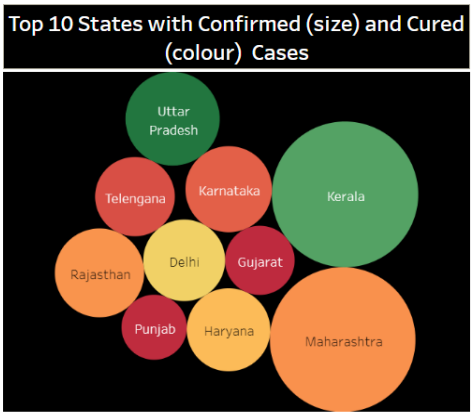
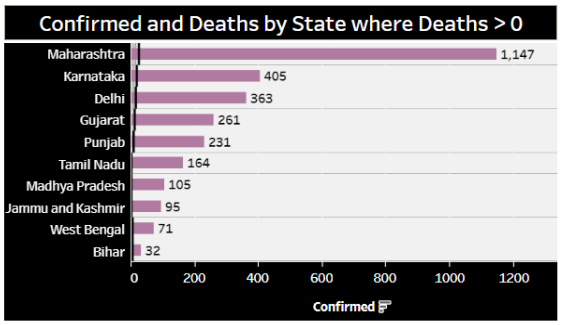
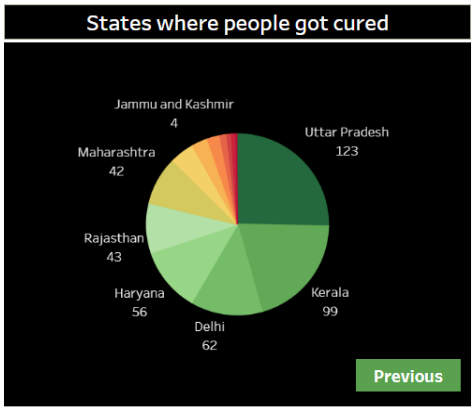
## Dashboard


Map - Total Deaths by State
Iran
Jammu and Kashmir
China
Pakistan
Madhya Pradesh
4
Mizoram
0
Andhra Pradesh
0
© Mapbox © OSM
Confirmed Foreign & Indian Nationals by State
State/UnionTerritory
(All)
Confirmed Foreign ..
200
100
0
Confirmed Indian N..
1000
500
0
Andaman an..
Andhra Prad..
Bihar
Chandigarh
Chhattisgarh
Delhi
Goa
Gujarat
Haryana
Himachal Pra..
Jammu and K..
Karnataka
Kerala
Ladakh
Madhya Prad..
Maharashtra
Manipur
Mizoram
Odisha
Puducherry
Punjab
Rajasthan
Tamil Nadu
Telengana
Uttar Pradesh
Uttarakhand
West Bengal
Covid Cases by State and Date
Confirmed
Cured
Deaths
State/UnionTerritory
(All)
Value
6K
4K
2K
0K
Jan 26
Feb 10
Feb 25
Mar 11
Mar 26
Absolute Numbers of Covid Cases by State
(All)
Confirmed
Cured
Deaths
6,103
486
109
States where deaths occured
Deaths
30
20
10
0
26
19
15
13
10
7
5
5
4
3
2
Maharashtra
Karnataka
Delhi
Gujarat
Punjab
Bihar
West Bengal
Himachal Pradesh
Madhya Pradesh
Tamil Nadu
Jammu and Kashmir
Confirmed Cases by Week
Time
Year of Date
Week o..
6:00 PM
2020
Week 5
4
Week 6
21
Week 7
21
Week 8
21
Week 9
21
Week 10
137
Week 11
442
Week 12
1,191
Week 13
3,521
10:00 AM
2020
Week 13
724
Next

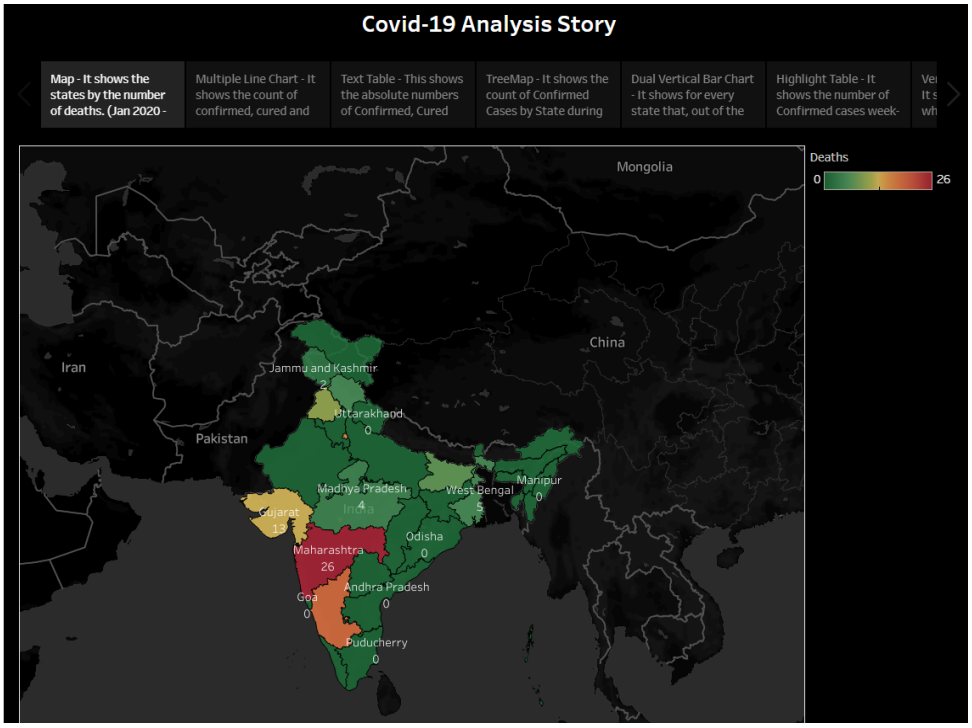

TreeMap of Confirmed Cases by State
Kerala
1,160
Uttar Pradesh
479
Rajasthan
431
Karnataka
405
Haryana
377
Gujarat
261
Punjab
231
Maharashtra
1,147
Delhi
363
Tamil Nadu
164
Ladakh
162
Telengana
343


Top 10 States with Confirmed (size) and Cured (colour) Cases
Uttar Pradesh
Telengana
Karnataka
Kerala
Rajasthan
Delhi
Gujarat
Punjab
Haryana
Maharashtra

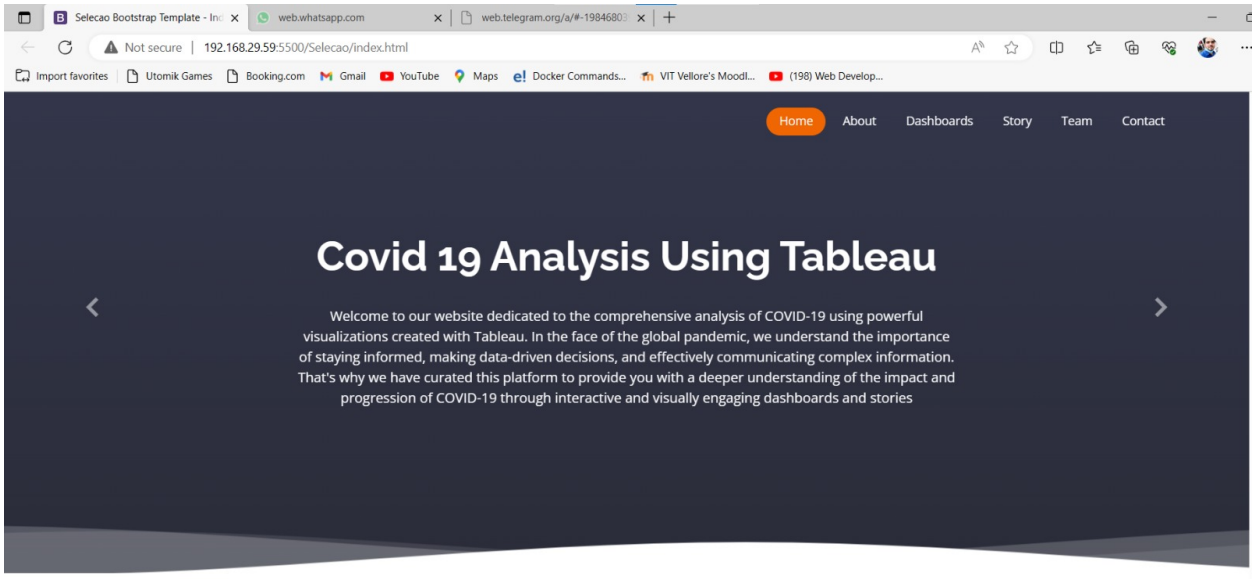

Confirmed and Deaths by State where Deaths > 0
Maharashtra 1,147
Karnataka 405
Delhi 363
Gujarat 261
Punjab 231
Tamil Nadu 164
Madhya Pradesh 105
Jammu and Kashmir 95
West Bengal 71
Bihar 32
0
200
400
600
800
1000
1200
Confirmed

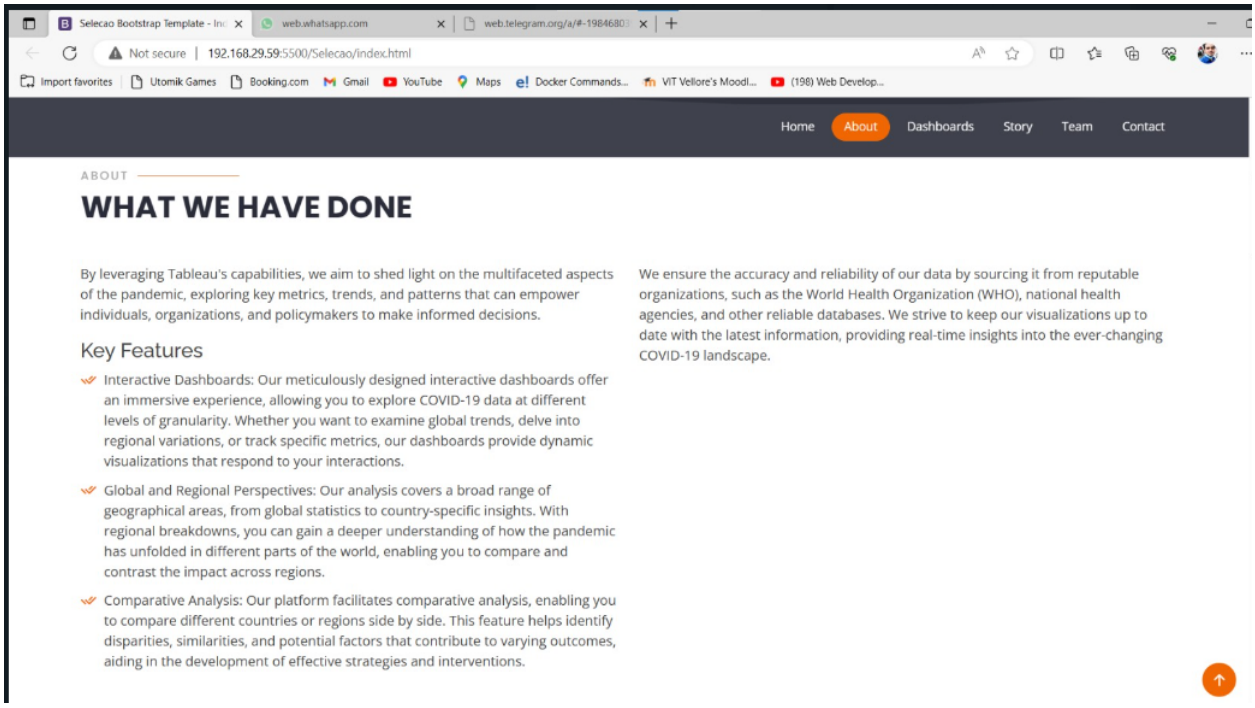

States where people got cured
Jammu and Kashmir
4
Uttar Pradesh
123
Maharashtra
42
Rajasthan
43
Haryana
56
Kerala
99
Delhi
62
Previous

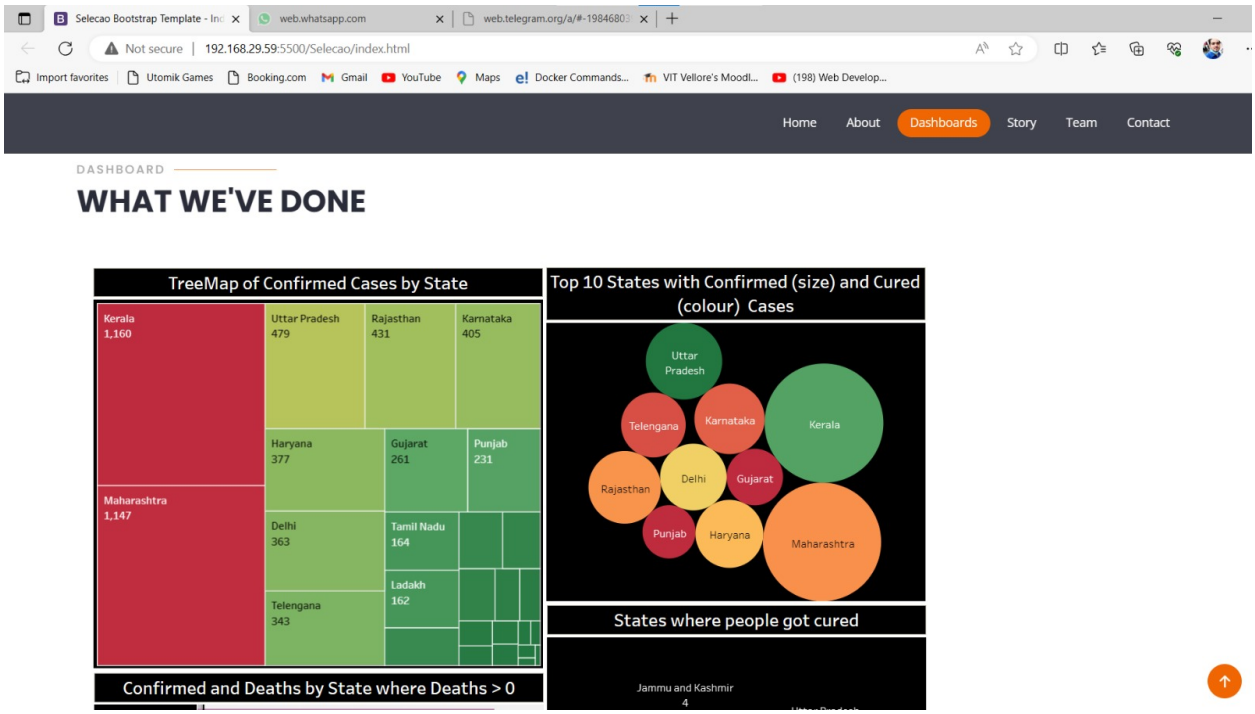
## Story


Covid-19 Analysis Story
Map - It shows the states by the number of deaths. (Jan 2020 -
Multiple Line Chart - It shows the count of confirmed, cured and
Text Table - This shows the absolute numbers of Confirmed, Cured
TreeMap - It shows the count of Confirmed Cases by State during
Dual Vertical Bar Chart - It shows for every state that, out of the
Highlight Table - It shows the number of Confirmed cases week-
Deaths
0
26
Mongolia
China
Iran
Pakistan
Jammu and Kashmir
2
Uttarakhand
0
Madhya Pradesh
4
West Bengal
5
Manipur
0
Gujarat
13
Odisha
0
Maharashtra
26
Andhra Pradesh
0
Goa
0
Puducherry
0

## Web Integration




Selecao Bootstrap Template - Inc
web.whatsapp.com
web.telegram.org/a/#-1984680
Not secure | 192.168.29.59:5500/Selecao/index.html
Import favorites
Utomik Games
Booking.com
Gmail
YouTube
Maps
Docker Commands...
VIT Vellore's Moodl...
(198) Web Develop...
Home
About
Dashboards
Story
Team
Contact
DASHBOARD
WHAT WE'VE DONE
TreeMap of Confirmed Cases by State
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Uttar Pradesh 479
Rajasthan 431
Karnataka 405
Haryana 377
Gujarat 261
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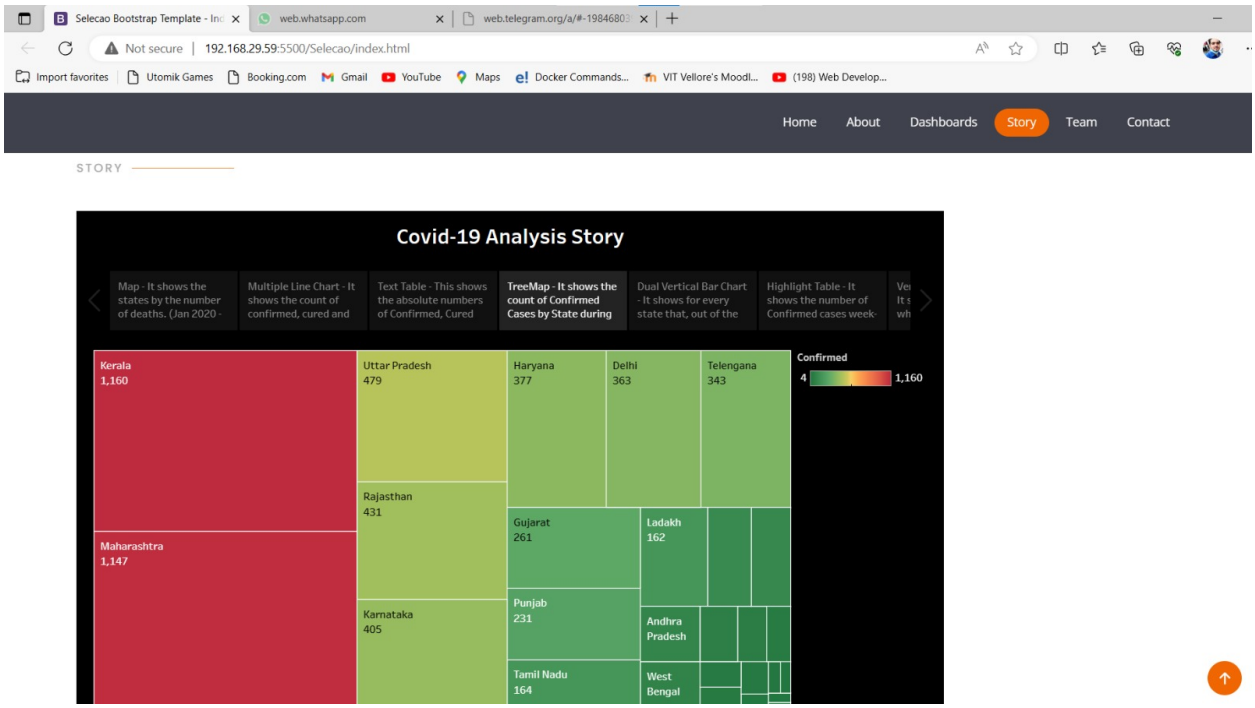
Telengana
Karnataka
Kerala
Rajasthan
Delhi
Gujarat
Punjab
Haryana
Maharashtra
States where people got cured
Jammu and Kashmir
4


Selecao Bootstrap Template - Inc
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Import favorites
Utomik Games
Booking.com
Gmail
YouTube
Maps
Docker Commands...
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(198) Web Develop...
Home
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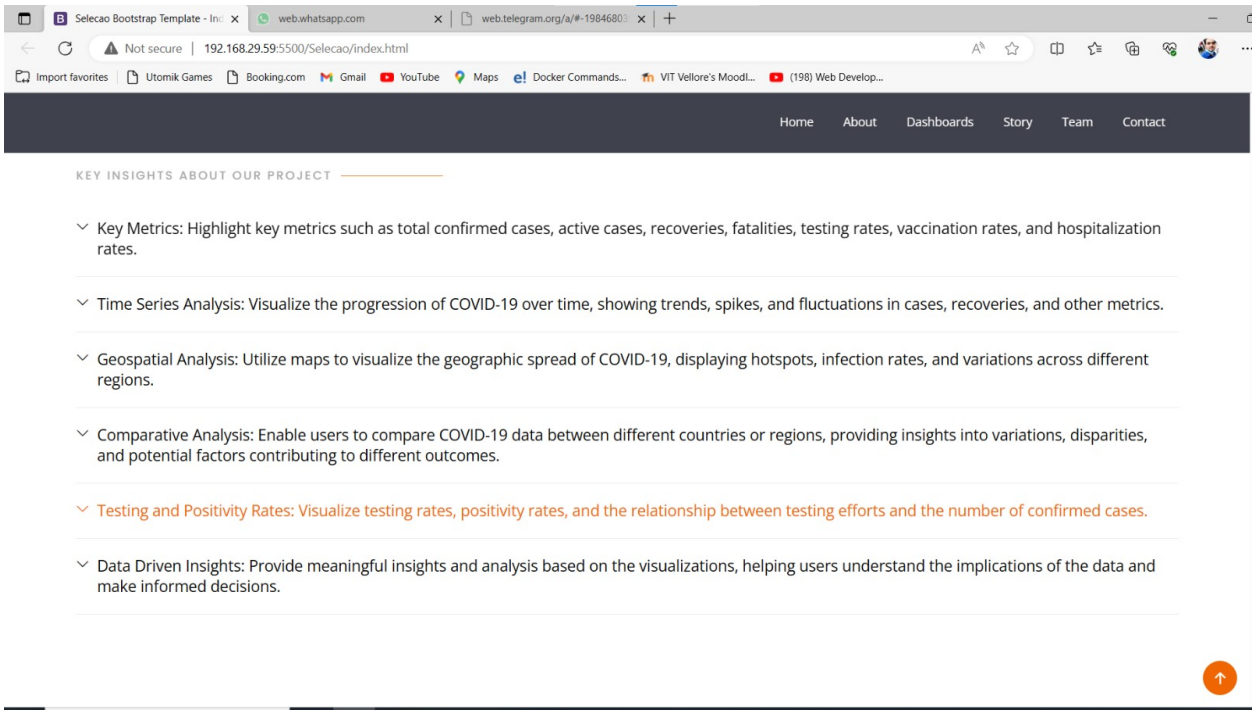
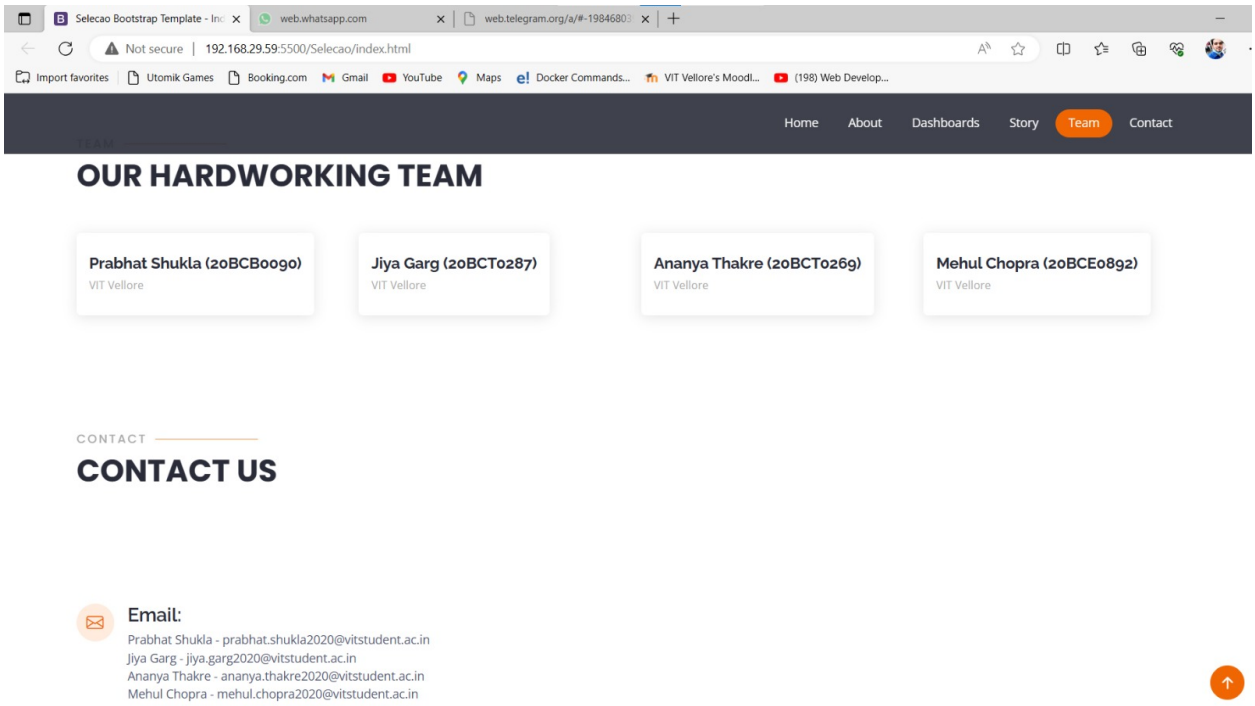

Selecao Bootstrap Template - Inc
web.whatsapp.com
web.telegram.org/a/#-1984680
Not secure | 192.168.29.59:5500/Selecao/index.html
Import favorites
Utomik Games
Booking.com
Gmail
YouTube
Maps
Docker Commands...
VIT Vellore's Moodl...
(198) Web Develop...
Home
About
Dashboards
Story
Team
Contact
KEY INSIGHTS ABOUT OUR PROJECT
Key Metrics: Highlight key metrics such as total confirmed cases, active cases, recoveries, fatalities, testing rates, vaccination rates, and hospitalization rates.
Time Series Analysis: Visualize the progression of COVID-19 over time, showing trends, spikes, and fluctuations in cases, recoveries, and other metrics.
Geospatial Analysis: Utilize maps to visualize the geographic spread of COVID-19, displaying hotspots, infection rates, and variations across different regions.
Comparative Analysis: Enable users to compare COVID-19 data between different countries or regions, providing insights into variations, disparities, and potential factors contributing to different outcomes.
Testing and Positivity Rates: Visualize testing rates, positivity rates, and the relationship between testing efforts and the number of confirmed cases.
Data Driven Insights: Provide meaningful insights and analysis based on the visualizations, helping users understand the implications of the data and make informed decisions.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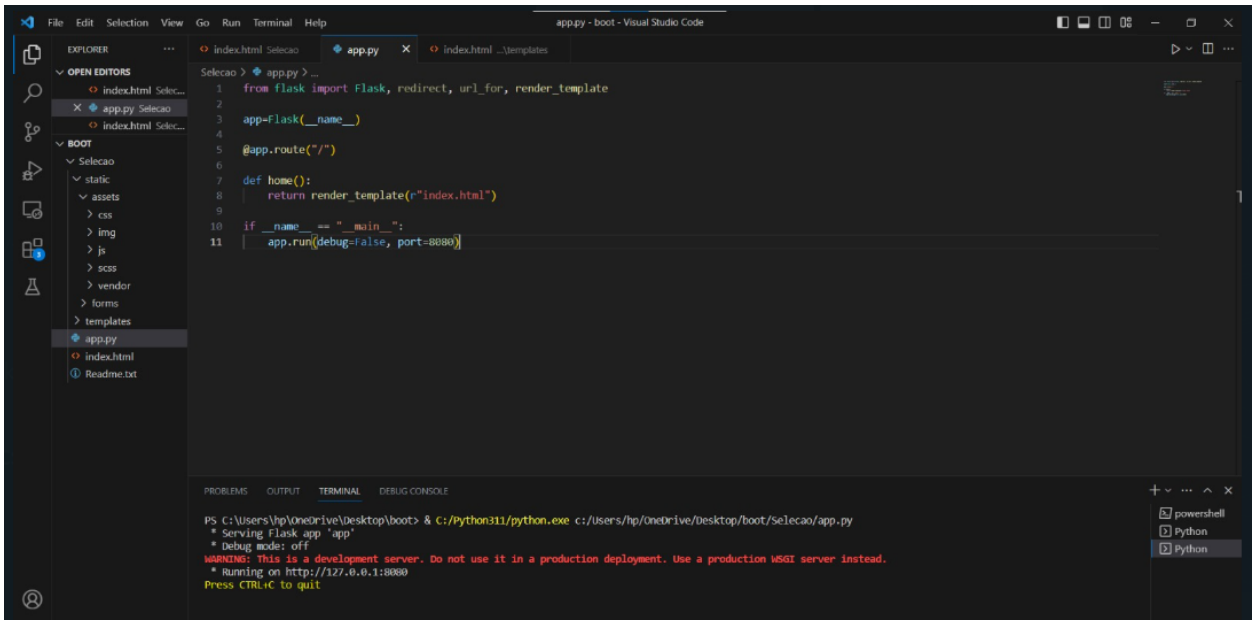


## 7. Advantages and Disadvantages

### Advantages

- Enhanced Understanding: The project provides a deeper understanding of the early spread and impact of COVID-19 during the specified time frame.
- Visual Insights: Data visualization on Tableau enables clear and visually appealing representations of complex COVID-19 data, making it easier to comprehend and communicate.
- Identifying Hotspots: The project helps identify regions that experienced significant surges in COVID-19 cases, aiding in targeted intervention and resource allocation.
- Informing Decision-Making: The project's insights can inform public health strategies, guide policy decisions, and support proactive measures for pandemic response.
- Awareness and Education: By presenting the findings through visualizations, the project helps raise awareness and educate the public about the severity and rapid spread of COVID-19.

### Disadvantages

- Limited Time Frame: The project focuses on a specific time period, which may restrict the scope of analysis and understanding of long-term trends or evolving dynamics.
- Data Availability and Accuracy: The project's effectiveness relies on the availability and accuracy of the COVID-19 data sources used, which may vary or contain potential inaccuracies.

- Changing Landscape: The project reflects the understanding and circumstances of COVID-19 during the specified time frame and may not capture the latest developments or trends.
- Incomplete Understanding: The project's analysis may be limited by the absence of data attributes such as gender, age, and occupation of individuals affected by COVID-19. These demographic factors play crucial roles in understanding differential impacts, risk factors, and potential disparities within the population.

## 8. Applications

- Tracking early spread and identifying regions heavily impacted by COVID-19.
- Analyzing hotspots and areas with a significant surge in cases during that period.
- Assessing the strain on healthcare systems and identifying areas requiring additional resources.
- Examining COVID-19-related mortality rates and identifying vulnerable populations.
- Comparing data across countries to understand variations in the spread and containment measures.
- Informing public health strategies by evaluating the effectiveness of early containment measures.
- Raising awareness about the severity and rapid spread of COVID-19 during that time period.

## 9. Conclusion

Through data visualization and analysis on Tableau, this project has provided valuable insights into the early spread and impact of COVID-19. By examining the data during the specified timeframe, we were able to track the virus's progression, identify heavily impacted regions, assess the strain on healthcare systems, and understand mortality rates. The project also facilitated comparisons across the states of India, enabling us to evaluate the effectiveness of containment measures and inform public health strategies.

These findings highlight the urgency of early intervention and the importance of proactive measures in mitigating the spread of COVID-19. The project's visualizations and analysis serve as a powerful tool for raising awareness about the severity of the pandemic during the early stages. The insights gained from this project contribute to the global understanding of COVID-19 and can inform future strategies for pandemic response.

Overall, this project emphasizes the significance of data-driven approaches in combating public health crises. By harnessing the power of data visualization and analysis, we can gain critical insights, make informed decisions, and work towards effective measures to protect public health and well-being.

## 10. Future Scope

The future scope is to extend the analysis to the data of a larger time frame analyzing data from 2020 to 2022. We can also include more data attributes like the gender, age, occupation of people affected and how covid impacted different businesses, its economic and social impact.

## 11. Bibliography

DataScience RoadMap Youtube videos

## 12. Links

### 12.1 Links to All Video Recordings

https://drive.google.com/drive/folders/1kPmDI_UC5NLyfDqd59A1umsPxeL8BCM6?usp=sharing

### 12.2 Link to Dashboard

https://public.tableau.com/views/Covid19AnalysisDashboard_16877168684550/Dashboard2?:language=en-US&:display_count=n&:origin=viz_share_link

### 12.3 Link to Story

https://public.tableau.com/views/Covid19AnalysisStory_16878909750790/Story1?:language=en-US&:display_count=n&:origin=viz_share_link

### 12.4 Link to Web Integration

Kindly view the implementation in the video demonstration of web integration. The website link will work only on local device.

### 12.5 Link to Github Repo

https://github.com/jiyagarg/tableau

https://github.com/Anniee02/Data-Analytics

**END OF REPORT.**