COVID-19 Global Impact Analysis Report

Q1) How COVID-19 Affected the World

Overview:

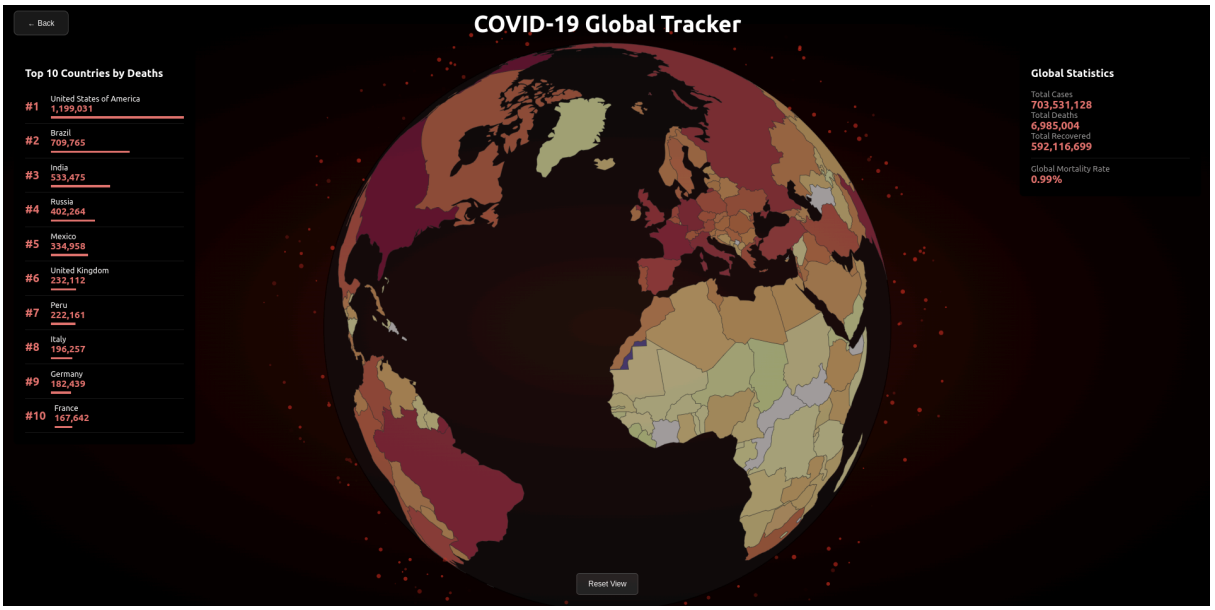
→ **Global COVID-19 Cases Visualization**

→ **Top 10 Most Affected Countries**

→ **Deaths vs. Recoveries Analysis**

1. Global COVID-19 Cases Visualization

Question: How did COVID-19 spread across different countries over time?



- This visualization uses an interactive rotating 3D globe to display COVID-19 cases worldwide.
- Each country is color-coded based on the severity of cases.

- Users can click over a country to view real-time statistics including total cases, death,recoveries and population and **Statistics per Million Population** which include Tests, Cases, Recovered, Deaths.
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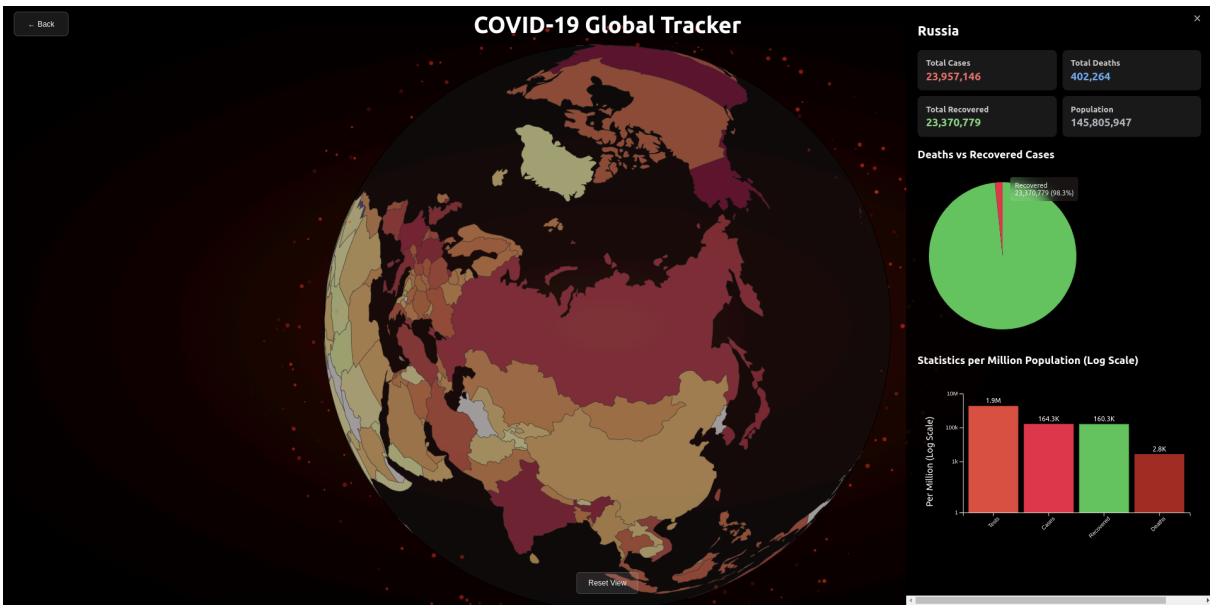

Key Features:

1. **Rotating Globe**: Users can interact with the visualization by dragging the to explore different regions.
2. **Color-Coded Data**: Countries with higher cases are displayed with more intense colors.
3. **Info Panel**: Clicking on a country opens a panel with detailed case statistics.

Insights:

1. Countries with dense populations such as the USA, India, and Brazil show the highest number of cases.
2. The visualization effectively tells which regions experienced the worst outbreaks over time.
3. The interactive nature allows exploration of country-specific data.

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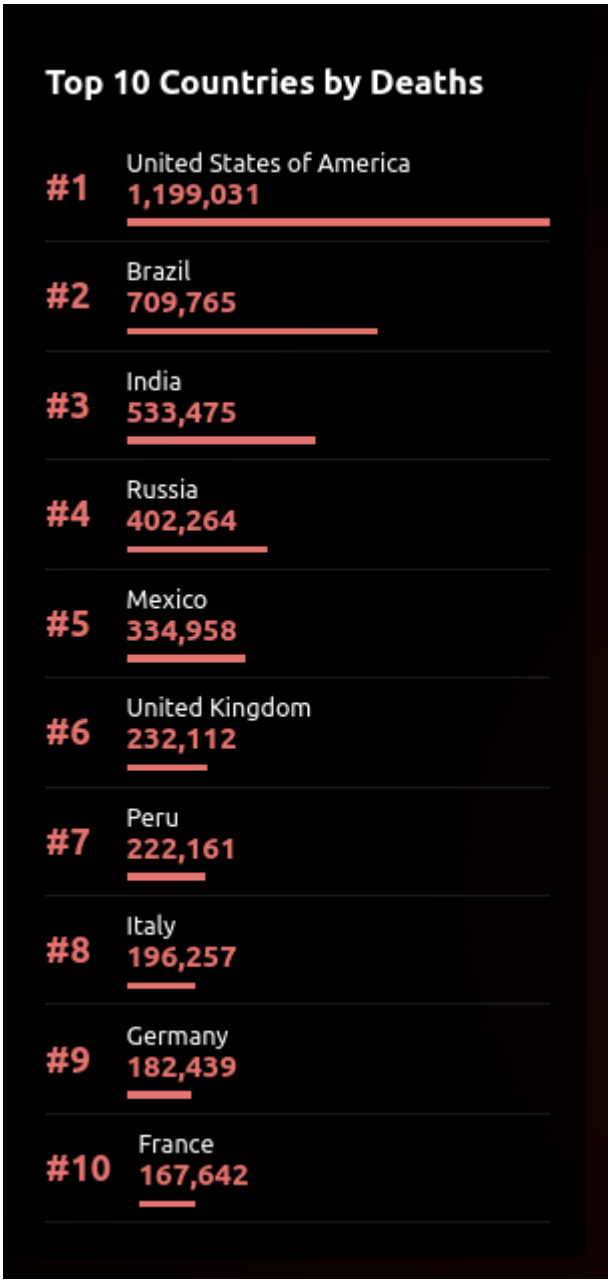
2. Top 10 Most Affected Countries

Question: Which countries reported the highest number of deaths due to COVID-19?



- This visualization presents the top 10 countries ranked by total deaths.
- A **bar chart enclosed in a table with proportional scaling** shows each country's death count.
- The **mortality rate** is highlighted for better understanding.

This is a vertical bar chart when you view initially you think its a table of lines and values it is a vartical bar chaart actually.

Key Features:

1. **Dynamic Scaling**: Bars are proportionally scaled based on death counts.
2. **Color Gradients**: More severe mortality rates are indicated with darker shades of red.

Insights:

1. The USA, Brazil, and India are among the top countries with the highest death tolls.
2. Certain regions with smaller populations but high mortality rates indicate healthcare strain.
3. This visualization helps understand the uneven global impact of COVID-19.

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3. Deaths vs. Recoveries Analysis

Question: What was the ratio of deaths to recoveries in various countries?

- This visualization uses a **pie chart** to compare the number of recoveries and deaths.
- It visually represents the **fatality rate vs. survival rate** for each country.

Key Features:

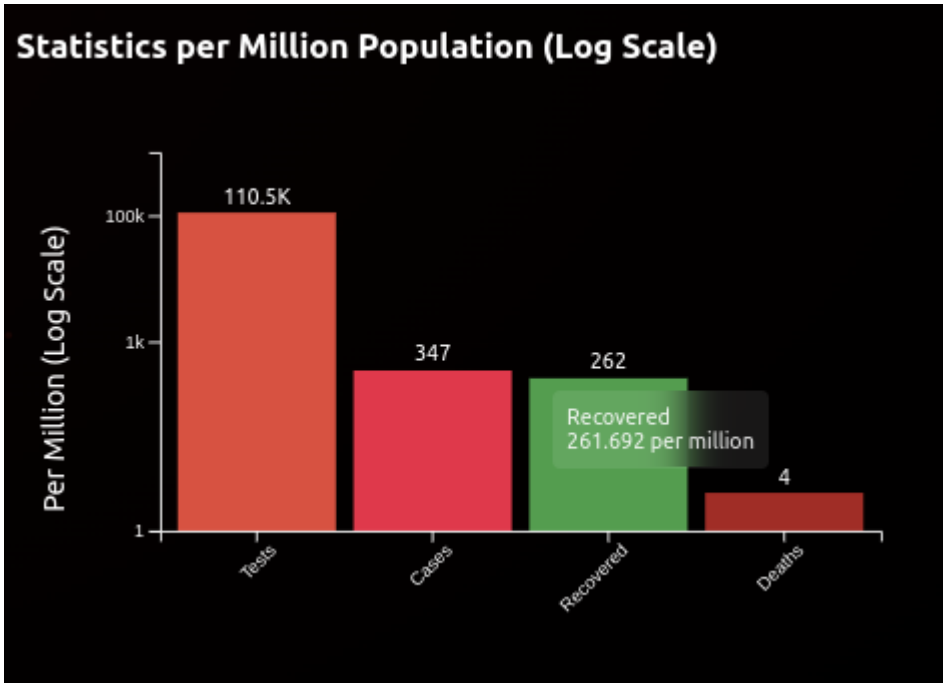
1. **Proportional Pie Chart**: Users can see the breakdown of deaths and recoveries.
2. **Hover Effects**: Hovering over a section displays numerical values.
3. **Country-Specific Data**: Selecting a country updates the pie chart accordingly.

Insights:

1. Most countries had a **higher recovery rate** than death rate.
2. Some regions experienced a **disproportionate fatality rate**, likely due to inadequate medical infrastructure.

4. Comparison of Tests, Cases, Recoveries, and Deaths

Question: How do COVID-19 testing rates compare to cases, recoveries, and deaths in different countries?



- This visualization uses a **bar chart** to compare key COVID-19 statistics: tests, cases, recoveries, and deaths.
- Clicking on a country updates the chart with its specific statistics.
- The bars are displayed on a **logarithmic scale** to better compare values with large differences.

Key Features:

1. **Dynamic Updates**: The chart updates when a country is selected.
2. **Logarithmic Scale**: Helps visualize numbers ranging from thousands to millions.
3. **Hover Effects**: Displays exact values for each category when hovered over.

Insights:

1. Countries with high testing rates tend to have lower death rates, indicating better detection and healthcare response.
2. Some countries have significantly more recoveries than deaths, showcasing medical efficiency.

Conclusion:

This visualization effectively conveys the **global scale and impact of COVID-19**. The interactive features allow us to explore country-specific data and identify

trends. High-risk regions, mortality rates, and case distributions are all clearly represented, helping to understand the pandemic's effects worldwide.

Q2) Impact of Covid on India

Overview:

The visualizations are divided into four main sections:

→ *Choropleth Map of India (Deaths)*

→ *State-wise Line Graph Analysis (Cured, Active Cases, Total Cases, Deaths)*

→ *Stacked/Grouped Bar Chart for Overall COVID-19 Cases in India*

→ *Line Graphs for AQI Trends in Five Cities*

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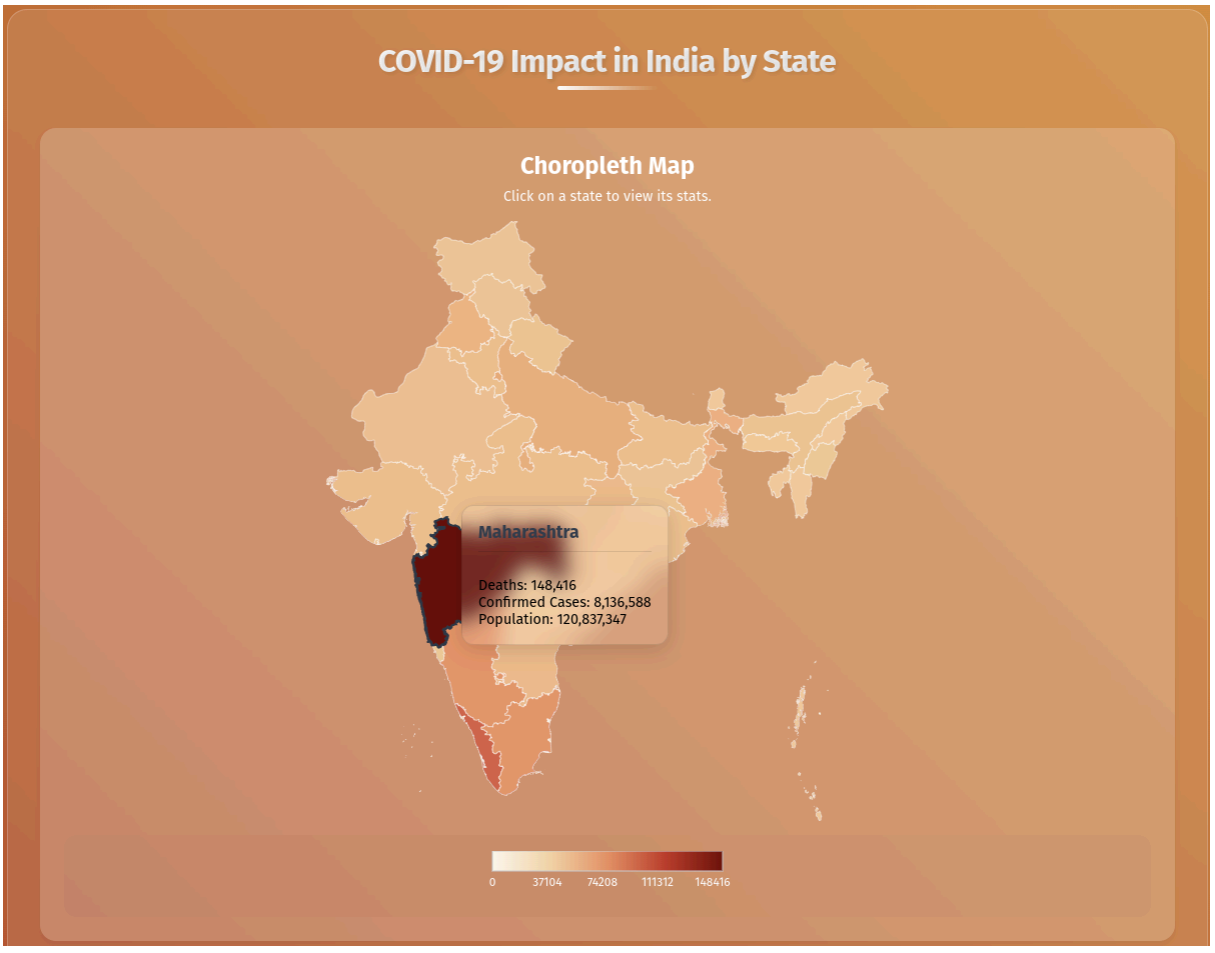
1. *Choropleth Map of India (Deaths)*

Question: How was the impact of COVID-19 distributed across different states in India in terms of deaths?



- This visualization uses a *Choropleth Map* to represent the number of deaths due to COVID-19 across various Indian states.
- The states are color-coded based on the severity of deaths, with darker shades representing higher fatalities.
- The interactive map allows users to hover over a state to view the exact number of deaths recorded.

Key Features:

1. Provides a geographical representation of COVID-19 impact across India.
2. Hovering over a state displays a tooltip with numerical data.
3. Clicking on a state reveals a detailed trend analysis of cases in that region.

Insights:

1. Some states, such as Maharashtra and Delhi, show significantly higher death counts compared to others.
2. States with higher urban density tend to have higher fatality rates.
3. The visualization helps in identifying regions that experienced severe COVID-19 waves.

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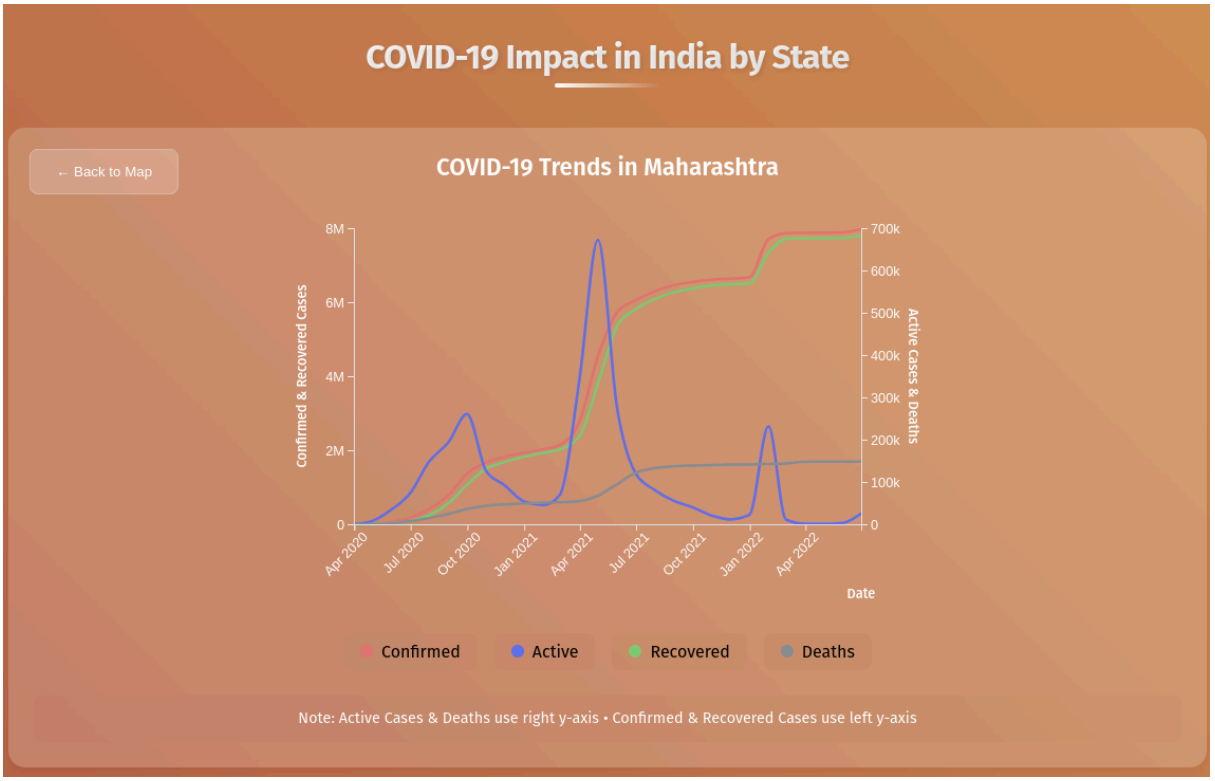
2. *State-wise Line Graph Analysis (Cured, Active Cases, Total Cases, Deaths)*

Question: How did COVID-19 cases fluctuate over time in each state?



- This visualization is a *line graph* that appears when a state is clicked on the choropleth map.
- It displays trends for *Confirmed, Active, Recovered, and Deaths* over time.
- Different colors represent different case types for easy distinction.

Key Features:

1. Users can analyze how COVID-19 cases evolved in a specific state.
2. A tooltip displays exact values when hovering over any point on the graph.
3. The interactive feature enables users to switch between states dynamically.

Insights:

1. Some states exhibit multiple peaks, indicating multiple waves of the pandemic.
2. Recovered cases gradually increase, showing improvements in healthcare and vaccinations.
3. Active cases tend to decline after a peak as cases are either resolved (recovered or deaths).

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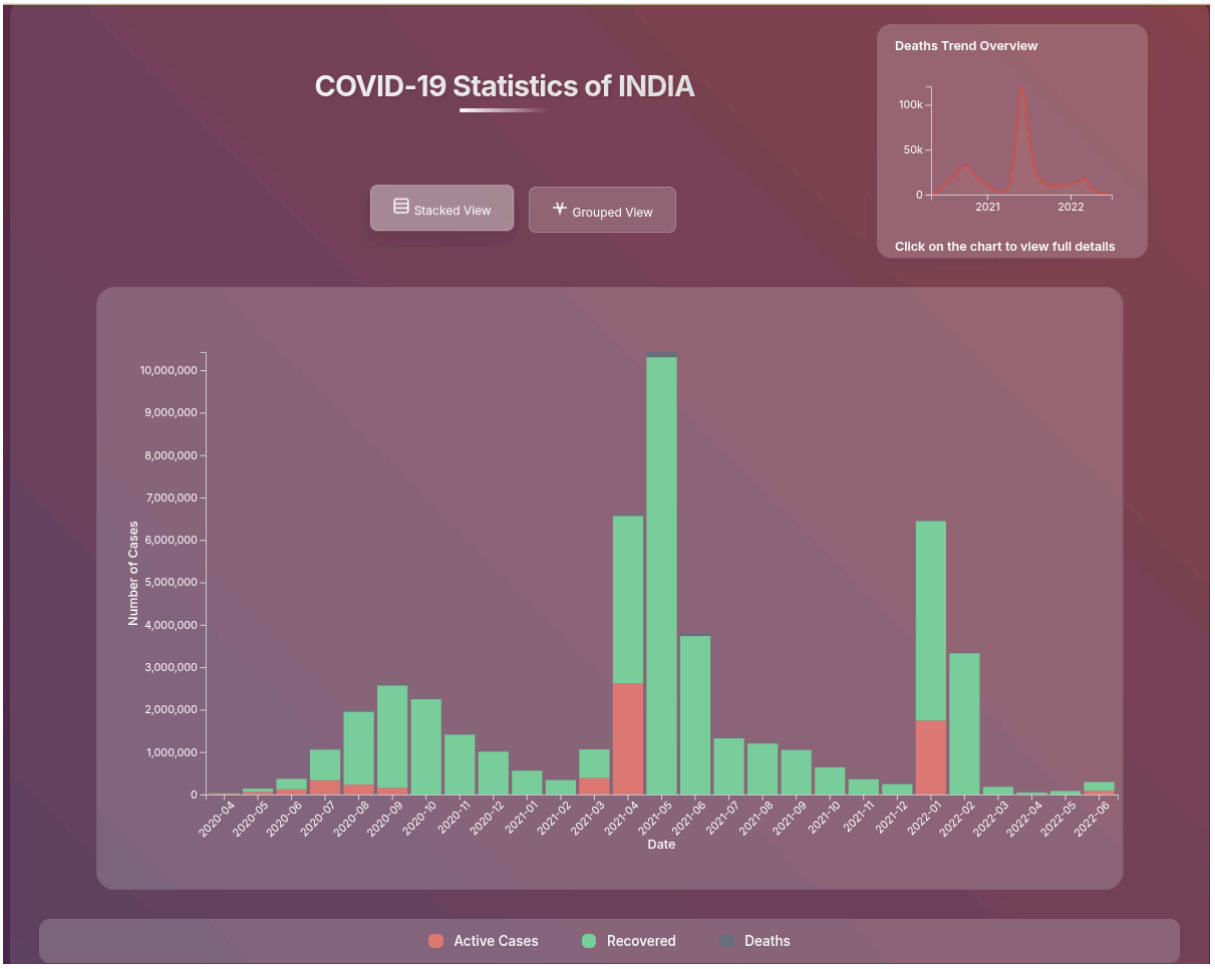
3. *Stacked/Grouped Bar Chart for Overall COVID-19 Cases in India*

Question: What was the overall distribution of COVID-19 cases in India?



- This visualization presents a **stacked and grouped bar chart** (toggleable with a button) to compare the proportions of **Active, Cured, and Deaths** over time.
- Since the number of deaths is significantly lower, a **Deaths Line Graph** is placed in the **top-right corner** for better visibility.
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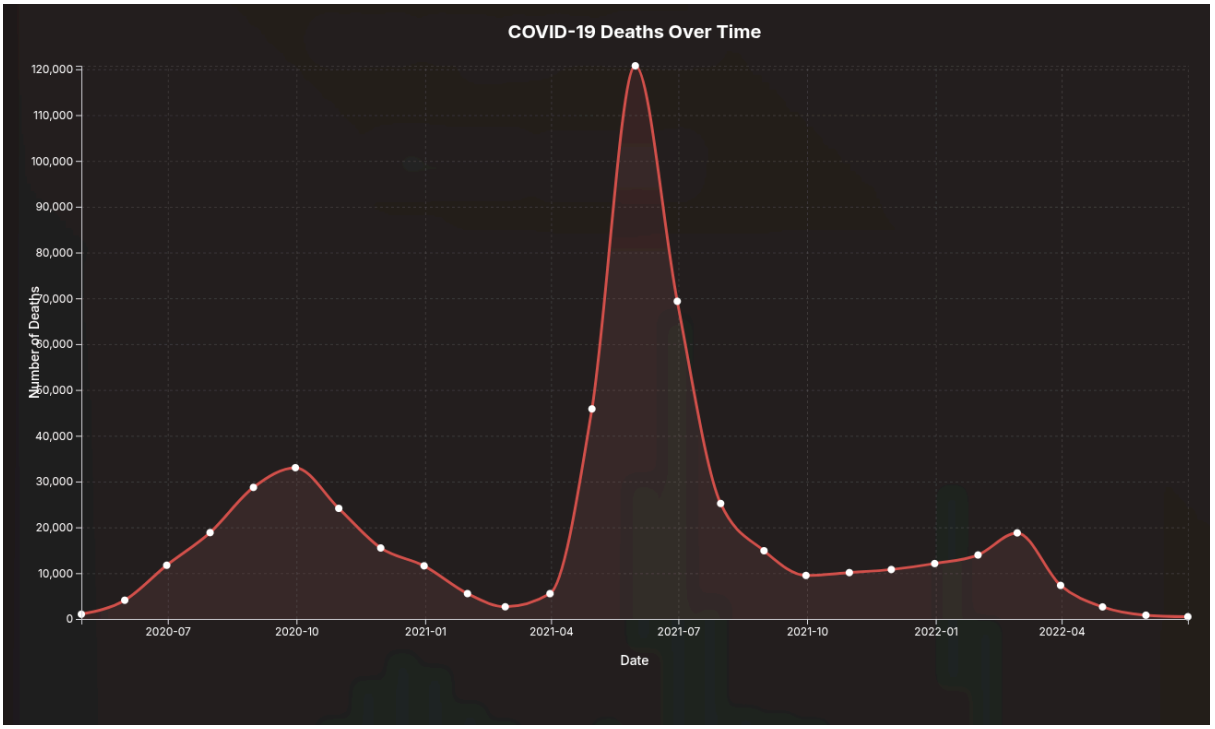

- Clicking on the line graph **opens a full-screen mode**, providing a detailed trend of COVID-19 deaths.

Key Features:

1. **Interactive Toggle:** Users can switch between **stacked** and **grouped** bar chart views.
2. **Sorting Options:** Charts can be arranged chronologically or in ascending/descending order.
3. **Tooltip for Insights:** Hovering over bars shows case percentages for easy analysis.
4. **Dedicated Deaths Line Graph:** Highlights the trends in deaths separately, ensuring visibility even when numbers are low.

Insights:

1. **Recovery trends dominate** over time, indicating an improvement in pandemic control.
2. **Deaths remain a small fraction** of total cases, but the separate line graph helps in tracking trends.
3. **Stacked vs. Grouped Comparison:** Helps in understanding both absolute numbers and relative proportions.

4. **Intuitive UI:** The toggle, tooltips, and interactive modal make data exploration seamless.

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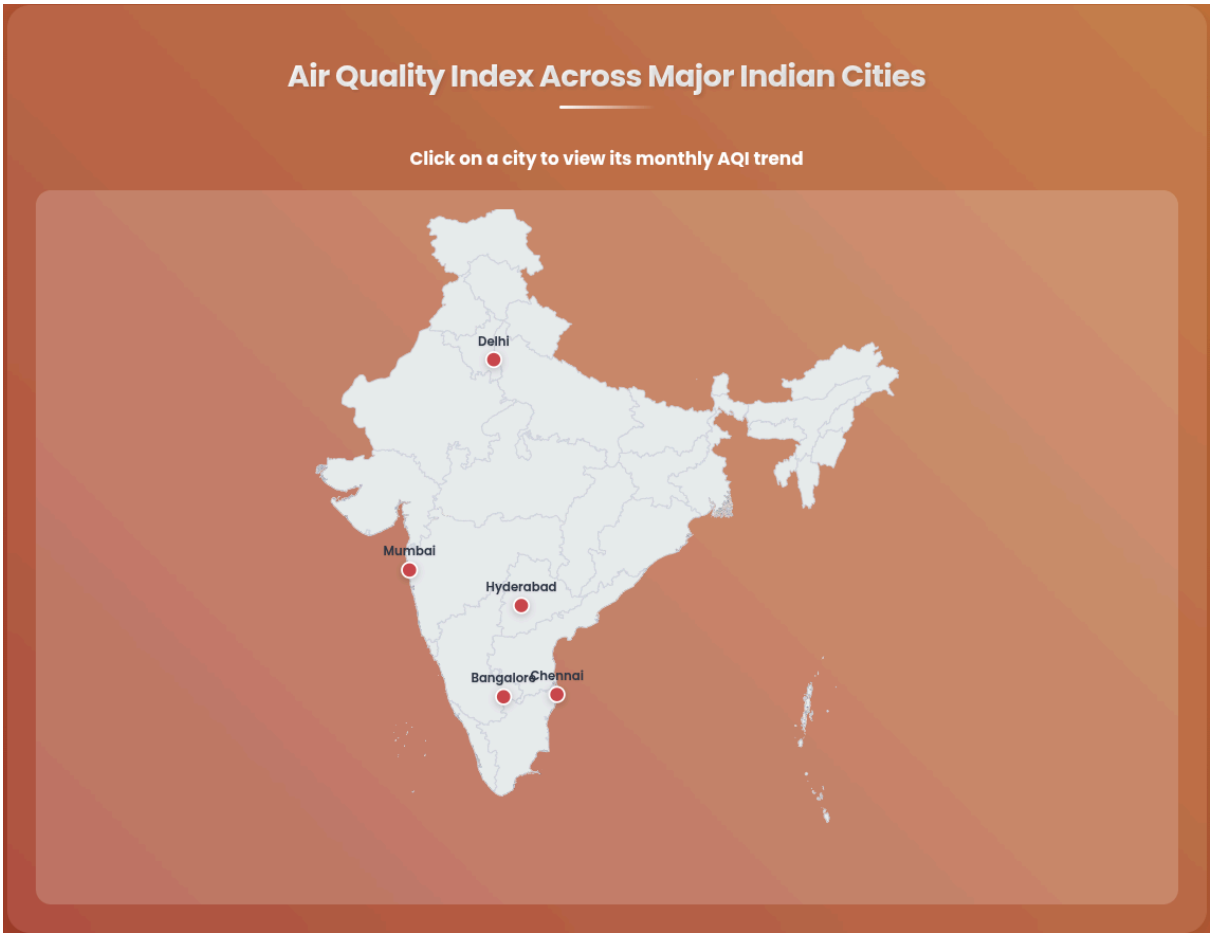
4. *Line Graphs for AQI Trends in Five Cities*

Question: How did COVID-19 lockdowns affect air pollution in major Indian cities?



- This interactive visualization combines a **map view** and **line graphs** to show **Air Quality Index (AQI)** trends in five major cities (**Delhi, Mumbai, Bangalore, Chennai, Hyderabad**).
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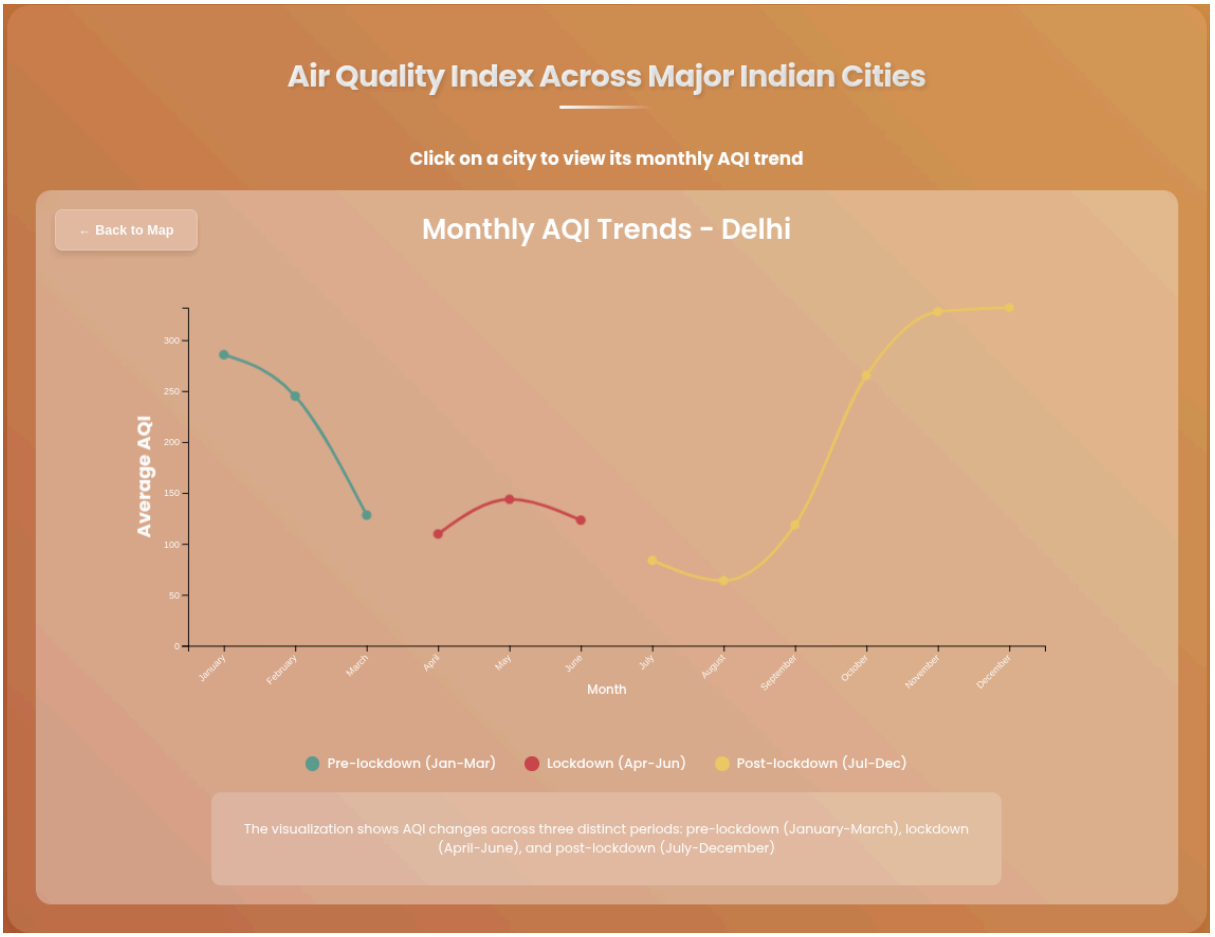


- Users can **click on a city** on the map to view its AQI trends before, during, and after the lockdown.

Key Features:

1. The graph highlights major time periods (pre-lockdown, lockdown, post-lockdown).
2. Users can clearly see dips in pollution levels when lockdowns were enforced.
3. Each city's AQI trend is color-coded for easy distinction.

Insights:

1. A significant drop in AQI was observed during the lockdown, indicating reduced vehicular and industrial emissions.
2. Post-lockdown, pollution levels gradually increased as restrictions were lifted.
3. This visualization provides clear evidence of how reduced human activity directly impacts air quality.

Conclusion:

- The combination of these visualizations provides a comprehensive understanding of COVID-19's impact on India.
- The *Choropleth Map* identifies the most affected states, while the *state-wise line graph* shows trends over time.
- The *stacked/grouped bar chart* provides an overall summary of cases, and the *AQI line graphs* highlight the environmental impact.
- These insights help policymakers, researchers, and the general public better understand the consequences of the pandemic.

Q3) Vaccination Progress in India

Overview:

The Visualizations are divided into three main sections:

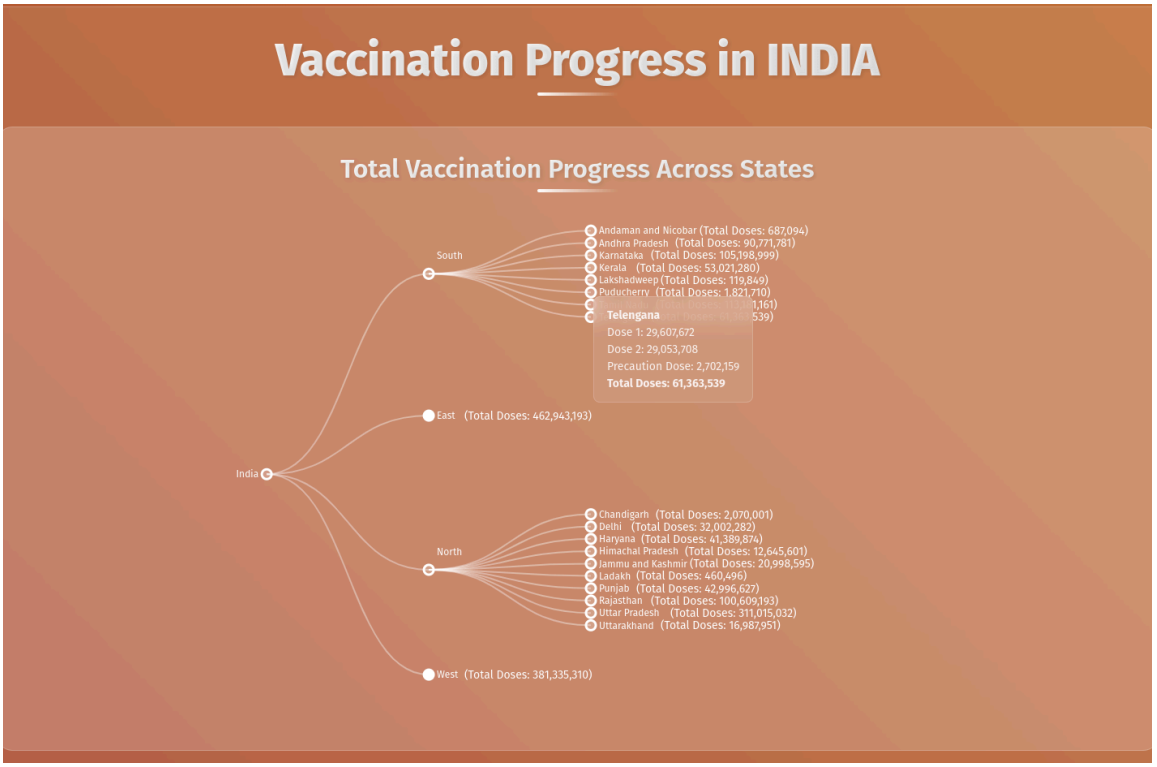
→ **Total Vaccination Progress Across States**

→ **Monthly Vaccination Progress in India**

→ **Monthly Vaccination Progress Across Age Groups**

1. **Total Vaccination Progress Across States :**

   Question : How does the vaccination progress vary across different states in India?



- This Visualization uses a tree map (Dendrogram) to display vaccination progress across different states in India.
- The tree map is hierarchical with root node as INDIA, followed by Regions and States.
- The tree map shows total doses given to each and every state.

Key Features :

1. Each leaf node of every branch will show the total doses
2. On hovering over any node show details like
    a. Dose - 1
    b. Dose - 2
    c. Precaution Dose
    d. Total Doses
3. On clicking a node, Collapsing or expansion of that node happens

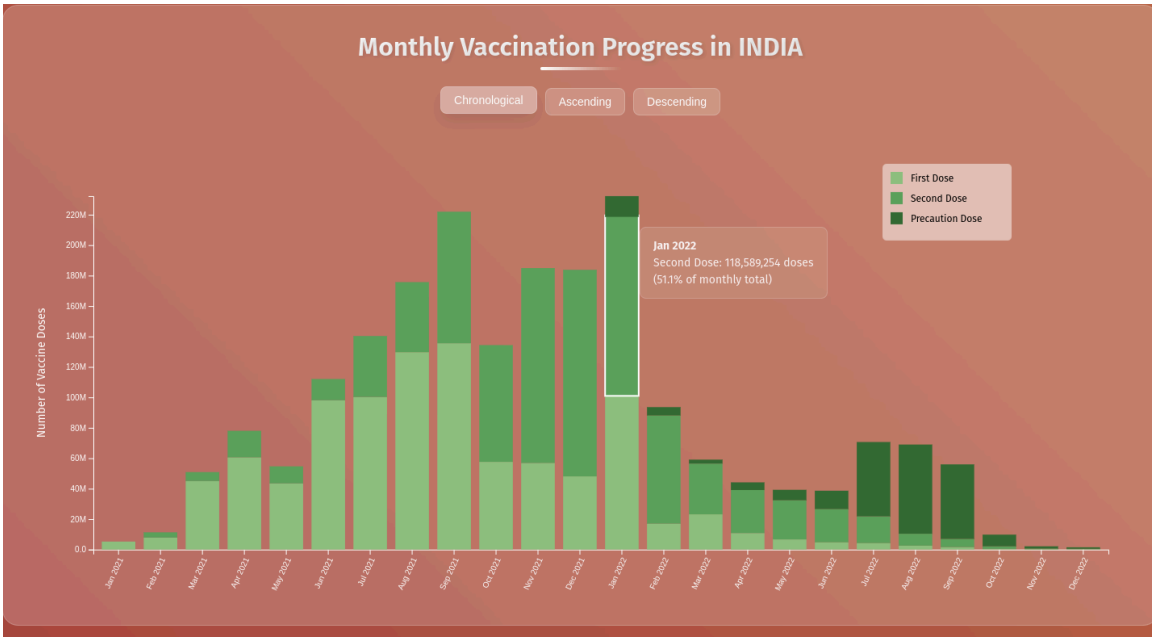
Insights :

1. The Dendrogram allows users to explore vaccination data at different levels like Regions and states

2. The tool-tip provides detailed information on the number of doses administered for each state, allowing users to compare the progress of first, second, and precaution doses.

2. **Monthly Vaccination Progress in India :**

   Question : How has the vaccination progress evolved over time in India?



- This visualization uses a stacked bar chart to show the monthly vaccination progress in India.
- The bars are divided into three segments representing the first dose, second dose, and precaution dose.

Key Features :

1. Three buttons named chronological , ascending, descending are given to sort the bars
2. Smooth animations while sorting method is changing
3. Tool-tip will have percentage of doses on overall stack will hovering over a particular bar

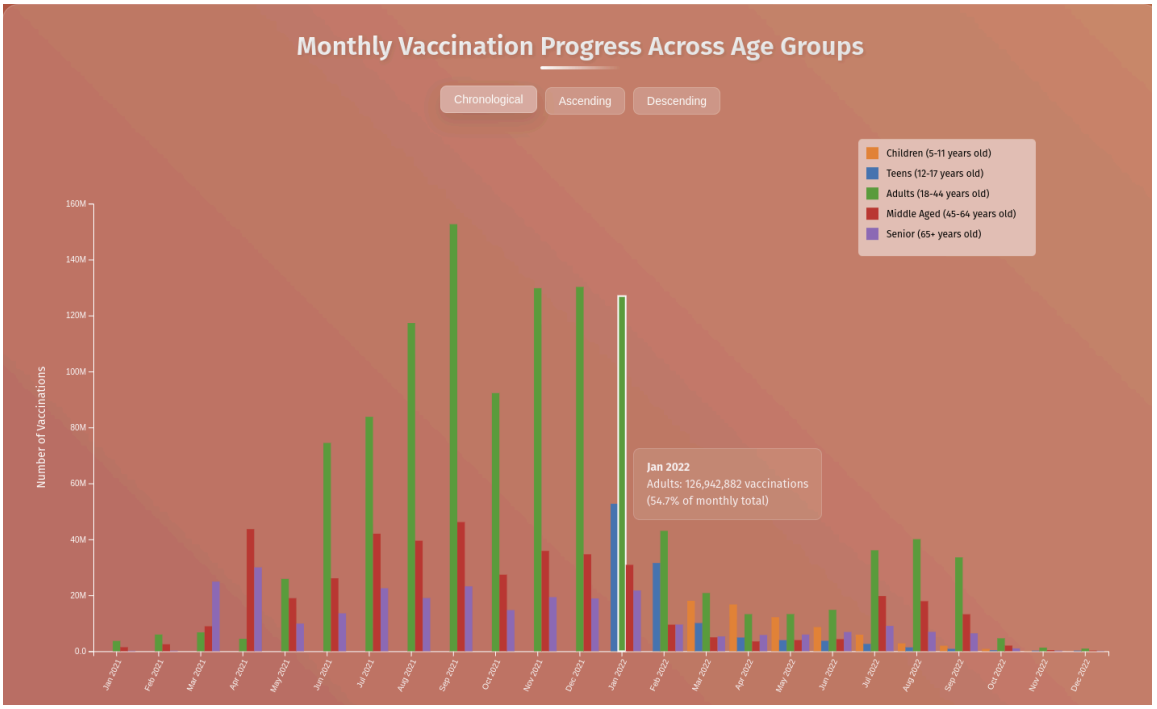
Insights :

1. The stacked bar chart provides a clear view of the vaccination trends over time.

2. Peaks in the chart indicate months with high vaccination activity, possibly due to increased vaccine availability or public health campaigns.
3. Sorting the data in ascending or descending order helps identify the months with the lowest and highest vaccination rates, which can be useful for evaluating the effectiveness of vaccination drives.

3. **Monthly Vaccination Progress Across Age Groups :**

   Question : How does vaccination progress vary across different age groups?



- This visualization uses a **grouped bar chart** to display the monthly vaccination progress across different age groups: children, teens, adults, middle-aged, and seniors
- Each bar represents a month, and the bars are further divided into segments representing different age groups.

Key Features :

1. Three buttons named chronological , ascending, descending are given to sort the bars.\
2. Sorting of ascending and descending is done on basis of total doses
3. Smooth animations while sorting method is changing.

4. Tool-tip will have percentage of doses on overall group will hovering over a particular bar

Insights :

1. The grouped bar chart allows for a detailed comparison of vaccination rates across age groups.
2. Middle aged have higher vaccination rates in the early stages of the vaccination campaign, This may because it was safer to try vaccination on a middle aged.
3. The visualization can reveal trends such as increasing vaccination rates among younger age groups as the campaign progresses.