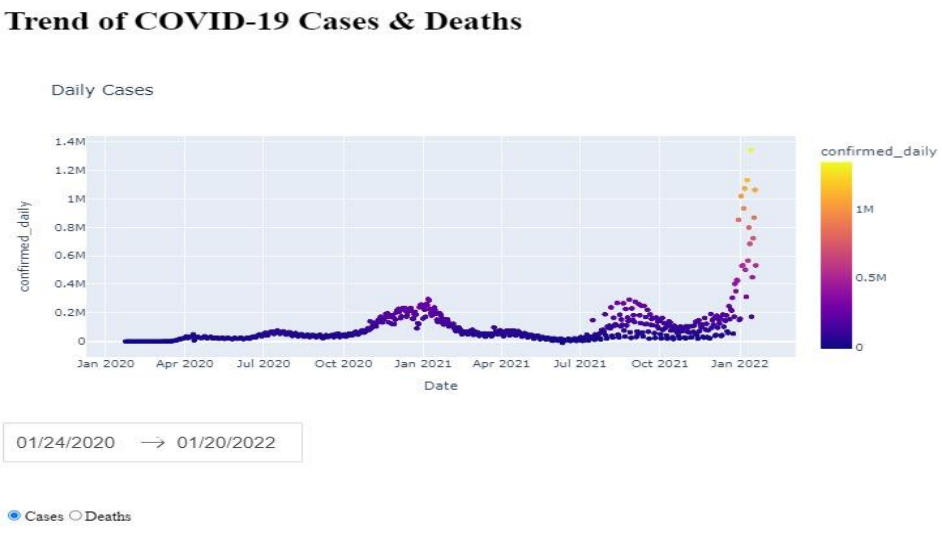
Stage V (Dashboard)

In stage V we are developing a simple interactive dashboard based on analysis done in previous stages. We are using plotly along with Dash as our framework.

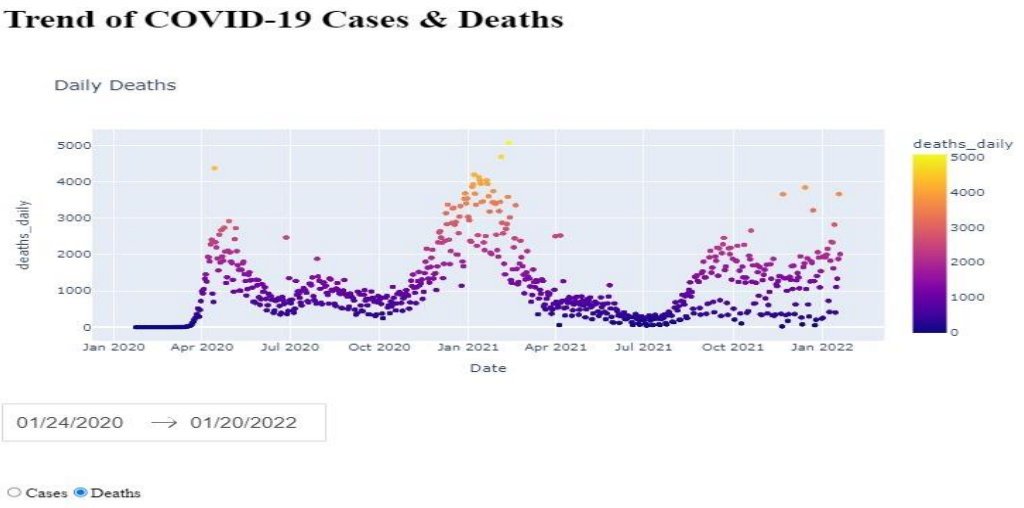
Allow for selection of date to show the trend of COVID-19 cases and deaths.

In this step, we have created a dash with selection of cases/deaths. In addition, there is a date selection feature, which allows for selection of date, and graph is modified within the provided date range.
Below are the screenshots for the same :

1. **Daily cases with selection of date**



2. **Death daily with selection of date**

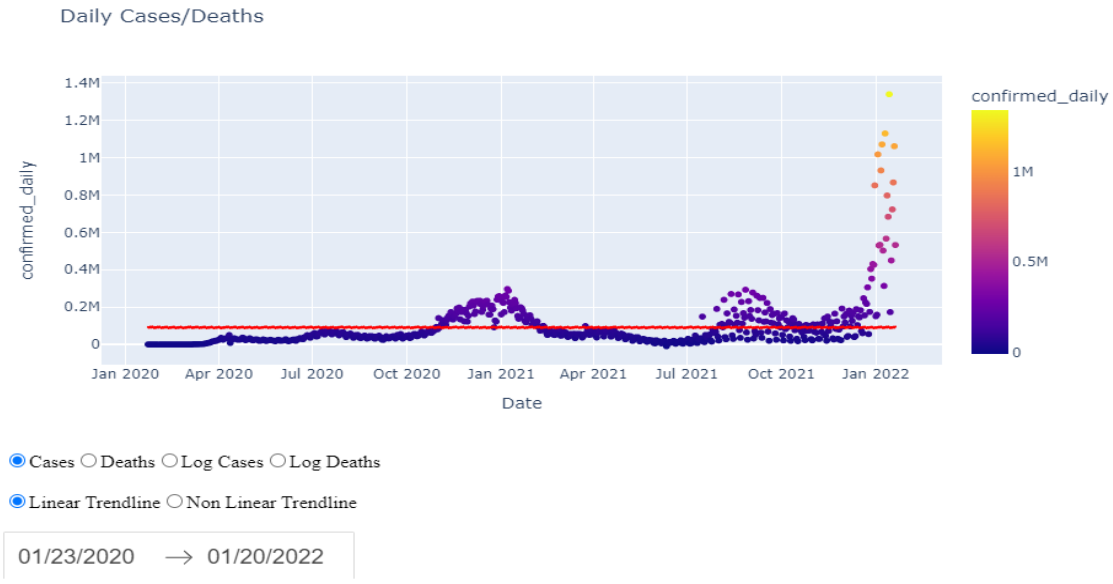


Linear and logarithmic cases/deaths with trendline prediction:

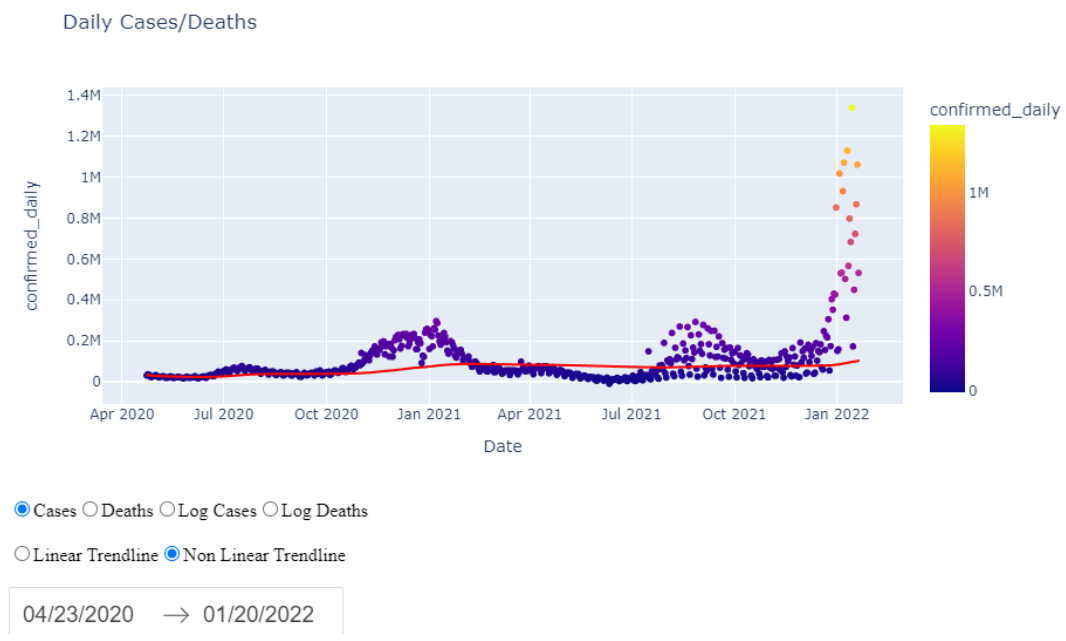
In this step, we have created a dash with selection of daily and logarithmic cases/deaths. In addition to this, we have given provision for selection of linear and nonlinear trendline by a radio button. In addition, there is a date selection feature, which allows for selection of date, and graph is modified within the provided date range.

Below are the screenshot for the same:

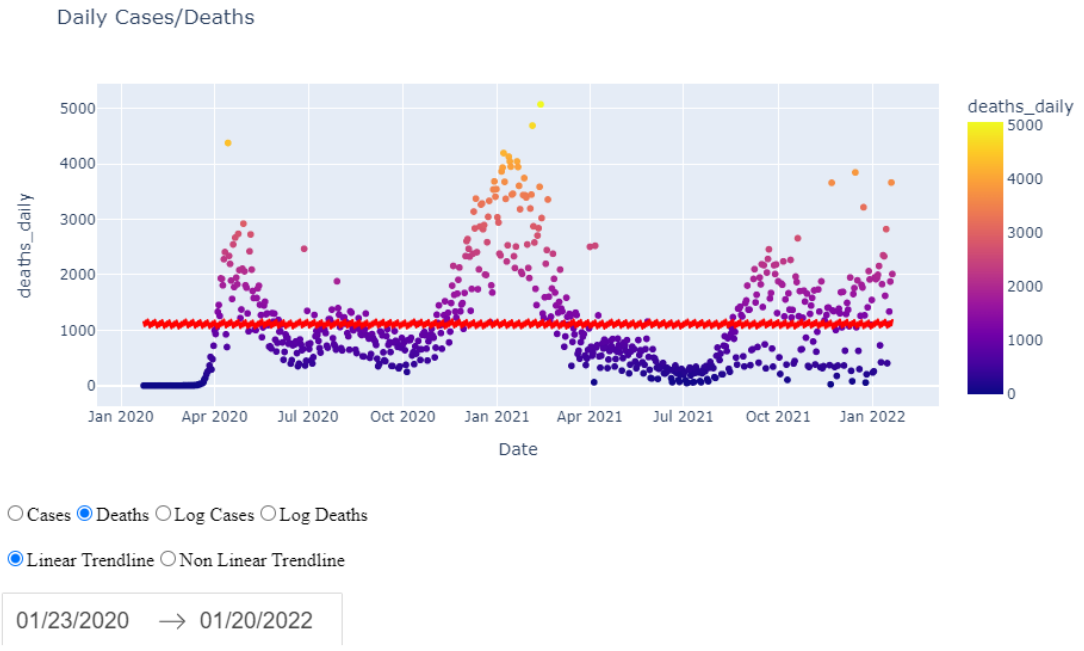
1. Daily cases with linear trendline:



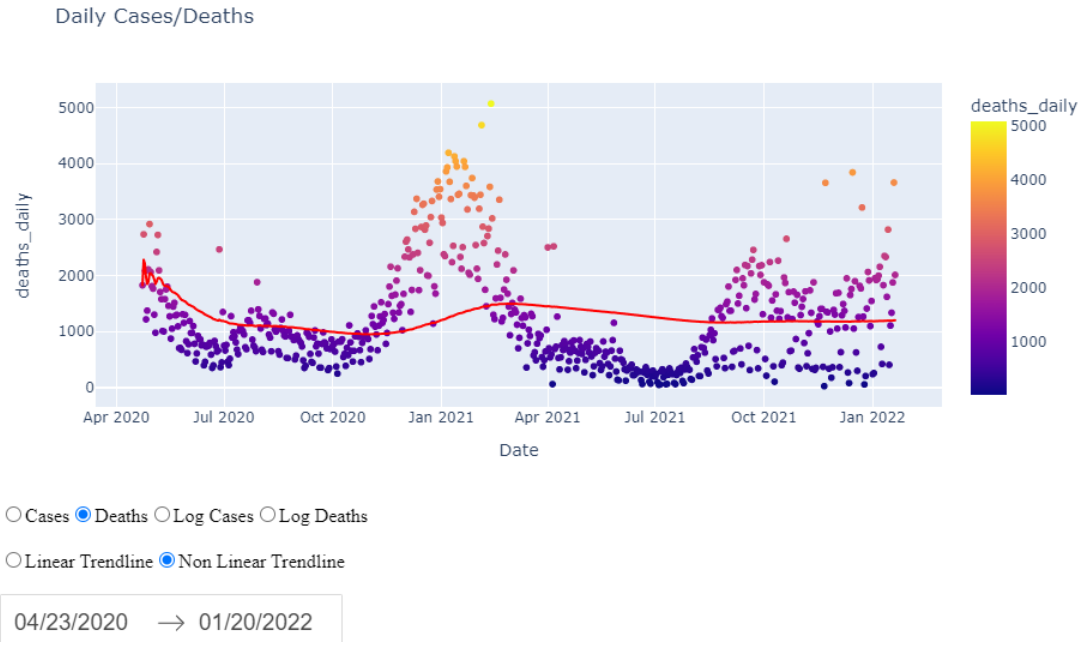
2. Daily cases with nonlinear trendline:



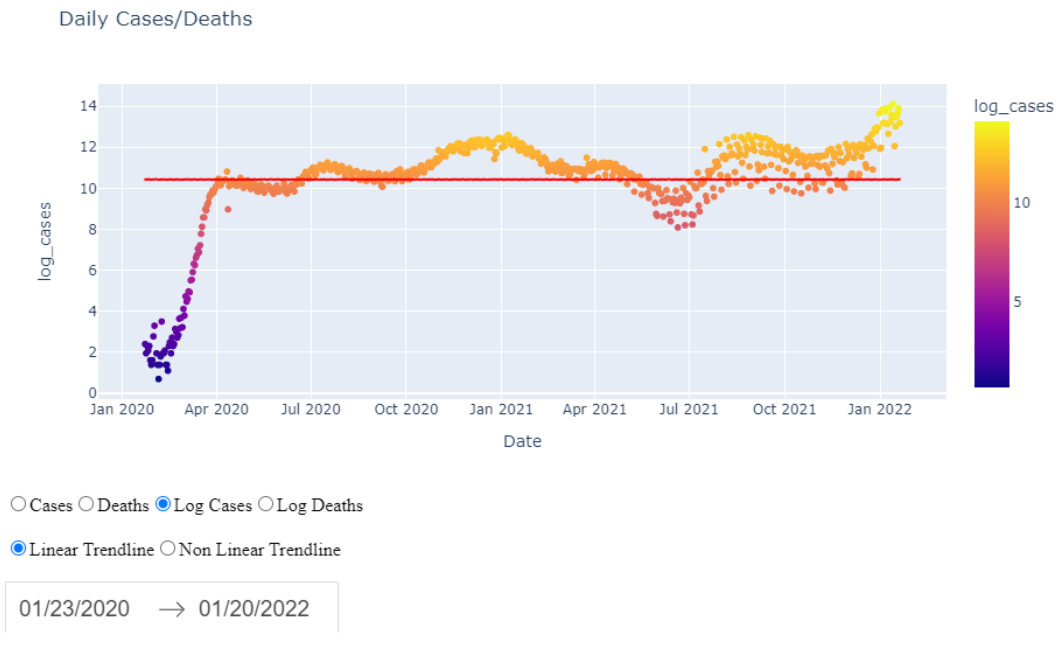
3. Daily deaths with linear trendline:



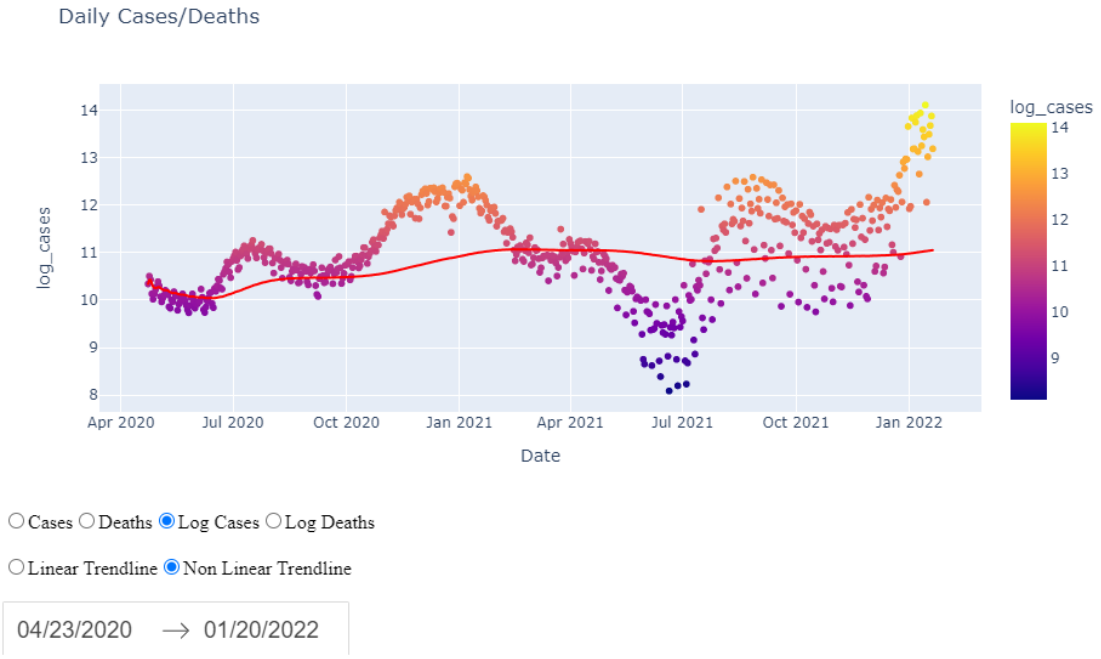
4. Daily deaths with nonlinear trendline:



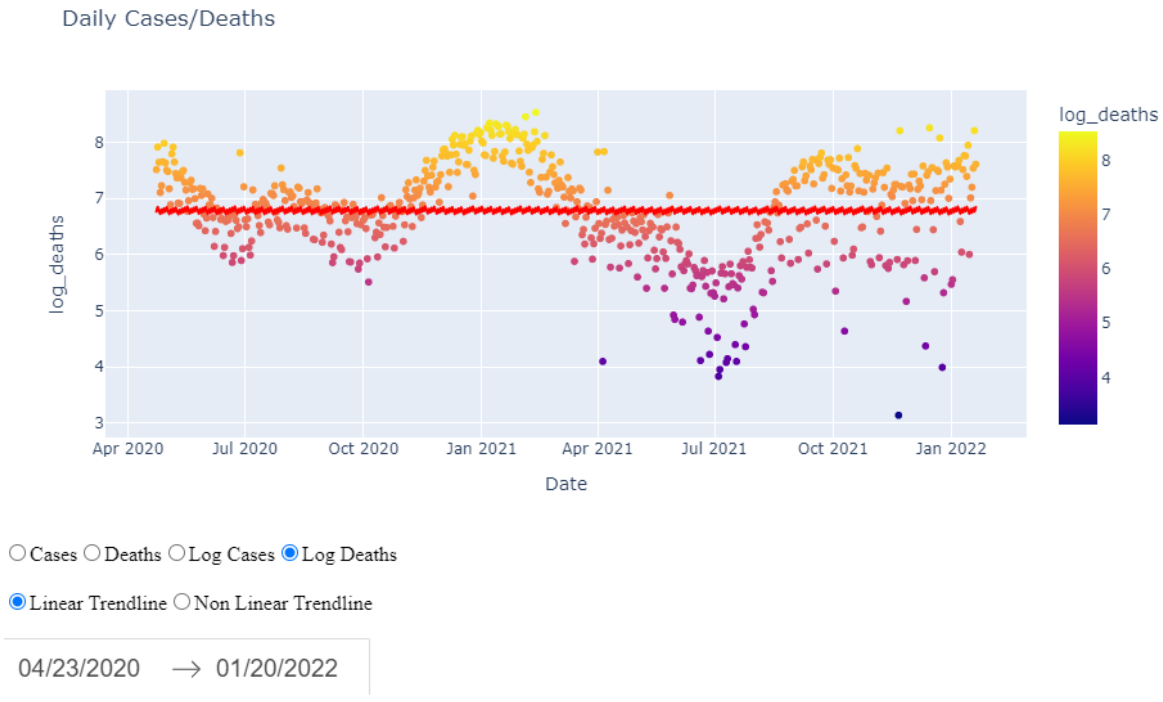
5. Logarithmic cases with linear trendline:



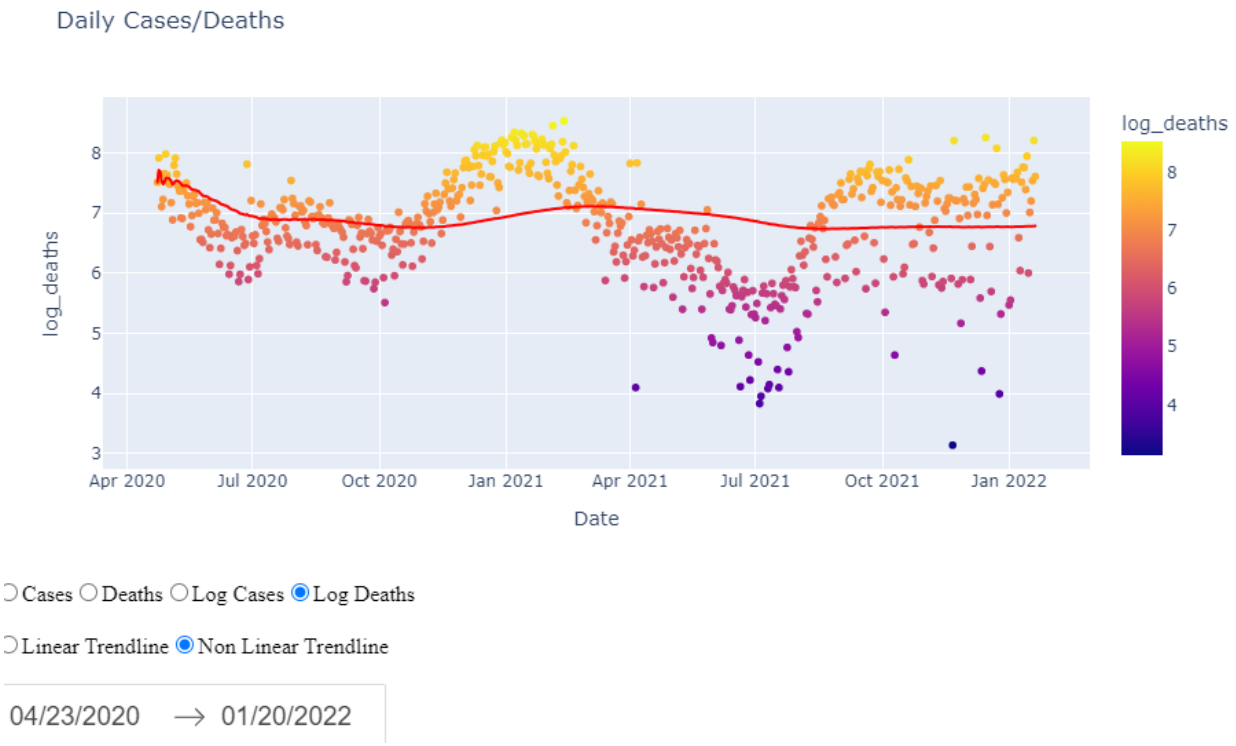
6. Logarithmic cases with nonlinear trendline:



7. Logarithmic deaths with linear trendline:



8. Logarithmic deaths with nonlinear trendline:



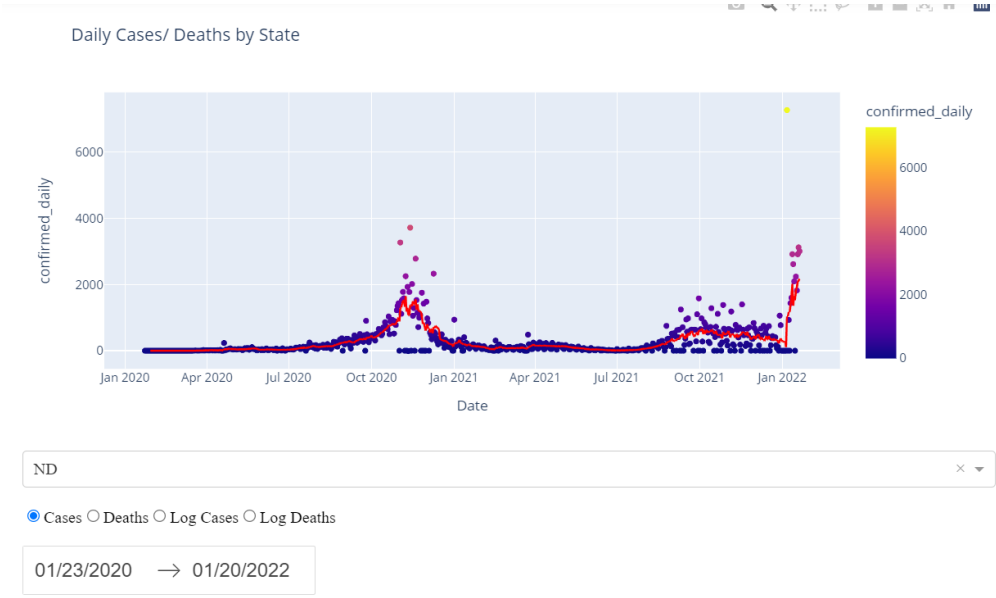
As you can see from the above graphs, the linear and nonlinear trendlines fit the model in a good manner. The nonlinear trendline follows the peaks and depths of cases/deaths in a better manner as compared to linear trendline.

Moving average by states:

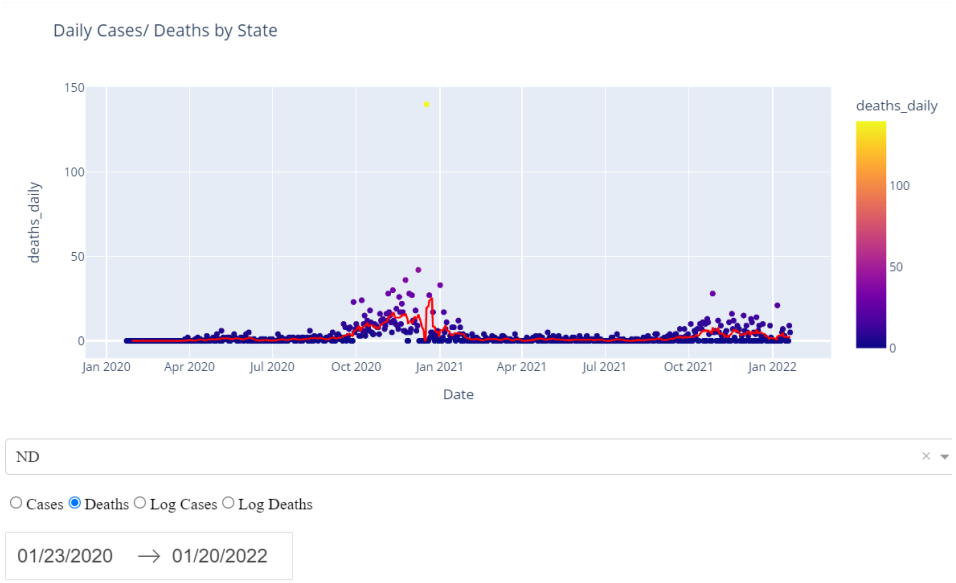
In the dashboard we can see that the moving average can be viewed on a particular State. By default, Nevada is selected, and we can view the graph for different states. There are radio buttons to view the case type like, Cases, Deaths, Log Cases and Log Deaths.
When the user selects a particular state and the choose one of the radio buttons, the trendline along with the moving average can be seen. The ultimate purpose of moving averages is to identify long term trends. They are calculated by averaging a group of observations of a variable of interest over a specific period. Such averaged number becomes representative of that period in a trend line.

Below is the screenshot for moving average for different states.

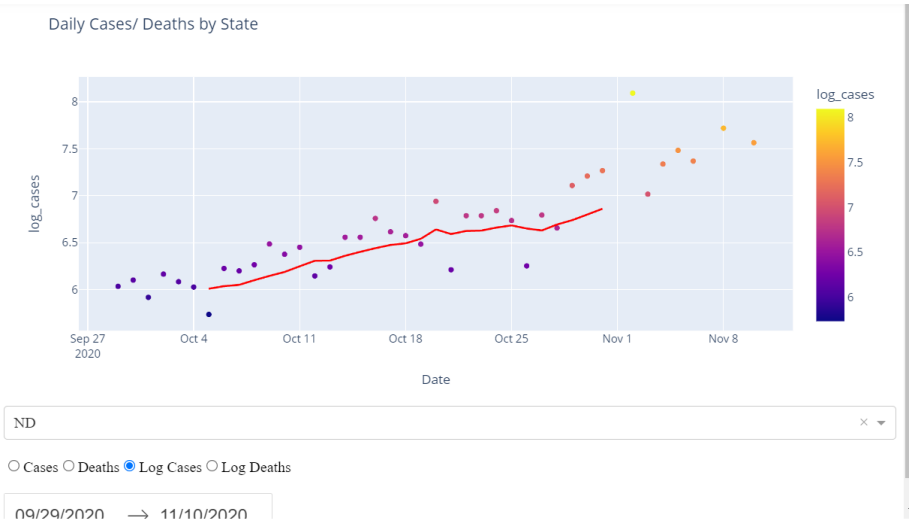
Cases:



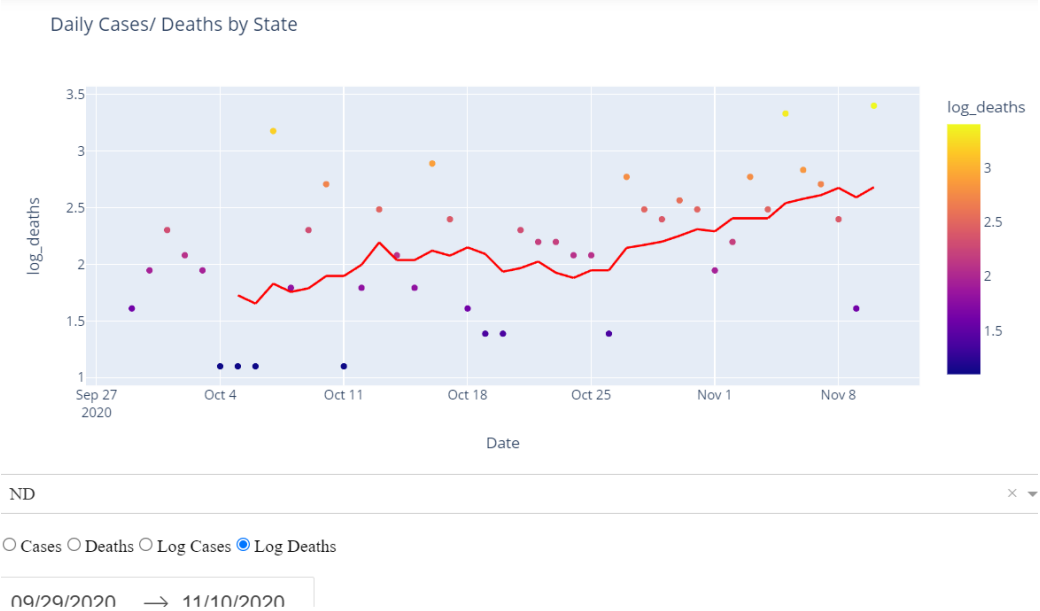
Deaths:



Log Cases:



Log Deaths:



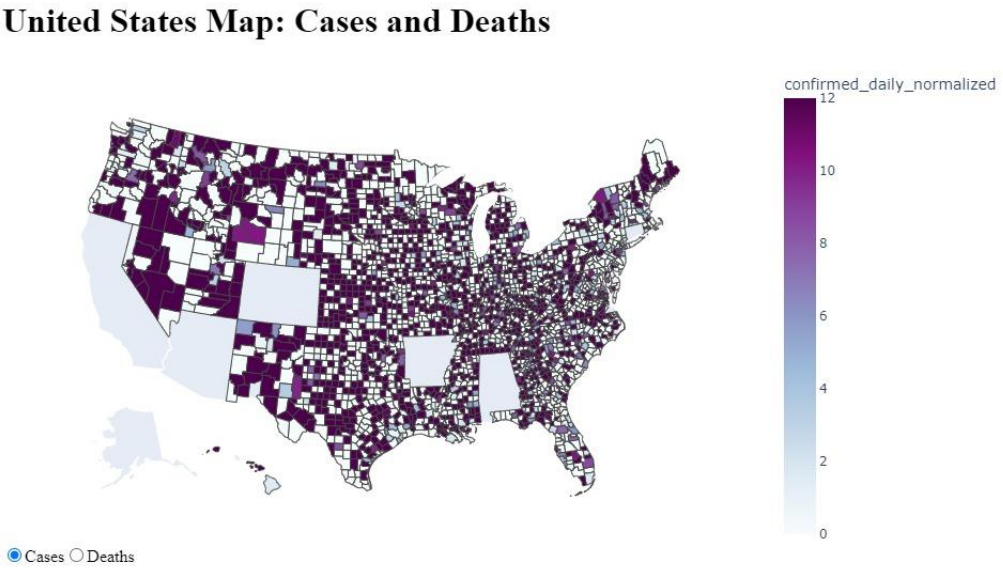
Inference:

- From the graph we infer that initially the cases were less but there was a spike between July 2020 to Jan 2021. Later the cases reduced but then the spike was observed again between September 2021 to January 2022.
- For Deaths, the spike was between September 2020 to Jan 2021 and again the second spike was seen from September 2021 to January 2022.

US map of cases and death .

We are using choropleth maps from Plotly Dash. We are displaying entire US map with county level information. As we move along different counties, county information will be displayed. In addition, we have added two radio buttons of cases and deaths to display US map for cases and death as shown below.

1. **Daily cases**



2. Death daily