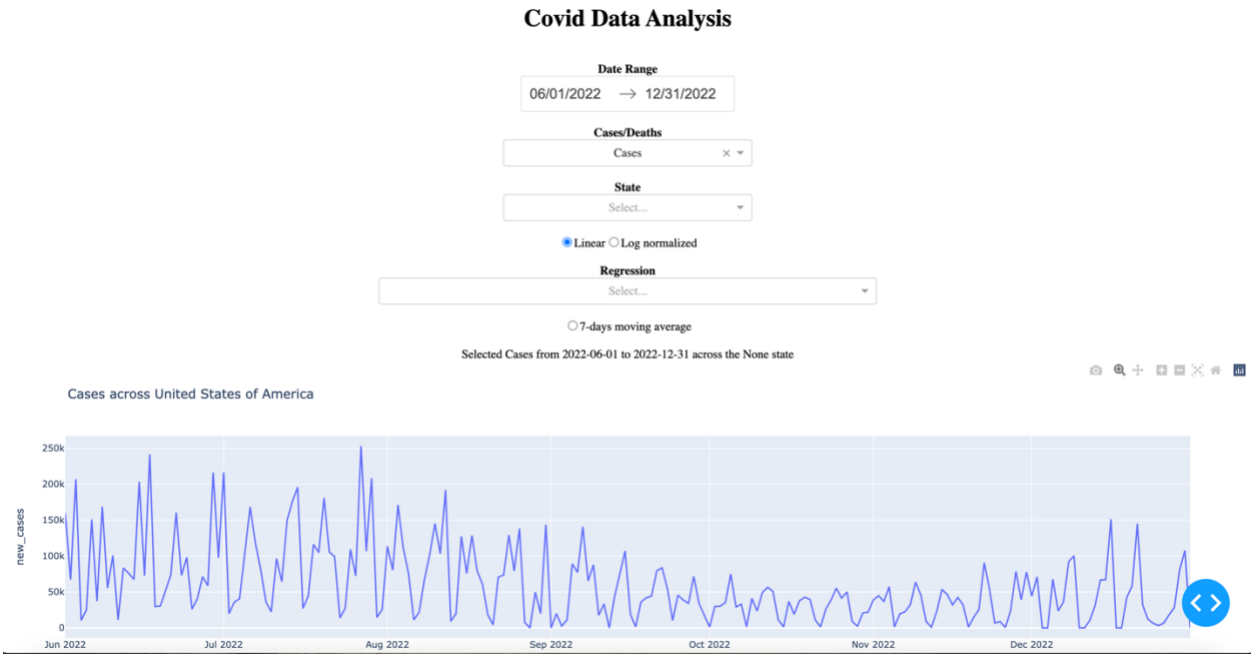
PROJECT STAGE-5

In this stage, we developed an interactive dashboard using the JupyterDash and plotly as the visualization is the best way to express the results so that it makes our findings more approachable and more understandable by the users.

Generally, the Jupyter Dashboard contains two main things one is app layout and other is app callback. In app layout we define the structure of the dashboard like what all input components should be available for the users to select and also the output components where the users can see the results for their inputs.

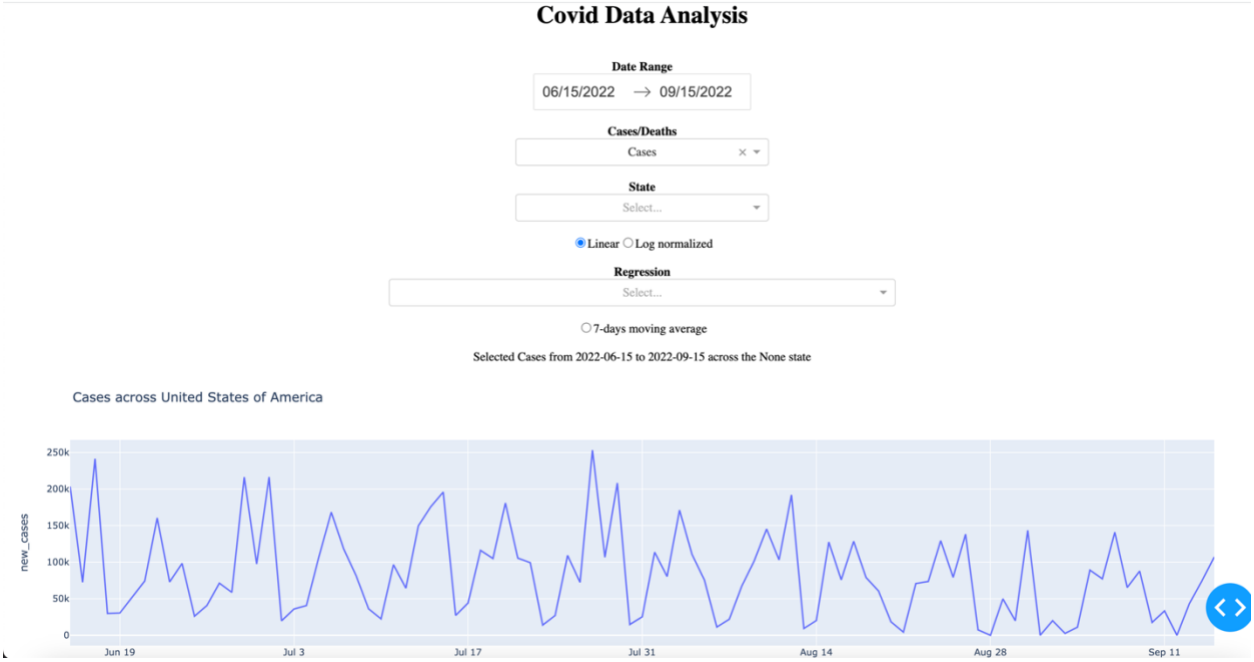
In order to achieve this dashboard we are using dash core components of plotly. We added few options to plot trend and that can be changed by user like selecting the specific timeline to see the trend (by default it is limited from June 1st 2022 to Dec 31st 2022 as we performed analysis on the second half of the year 2022), dropdown where cases/deaths input parameter can be selected (by default cases will be selected), dropdown for selection of states (By default we can see the new cases trend for all USA data), also added linear, log-normalized option to entire data, we can also project a linear/non-linear regression model trend lines to the data and also a 7-day moving average on the data. Below are some of the insights of the developed dashboard.

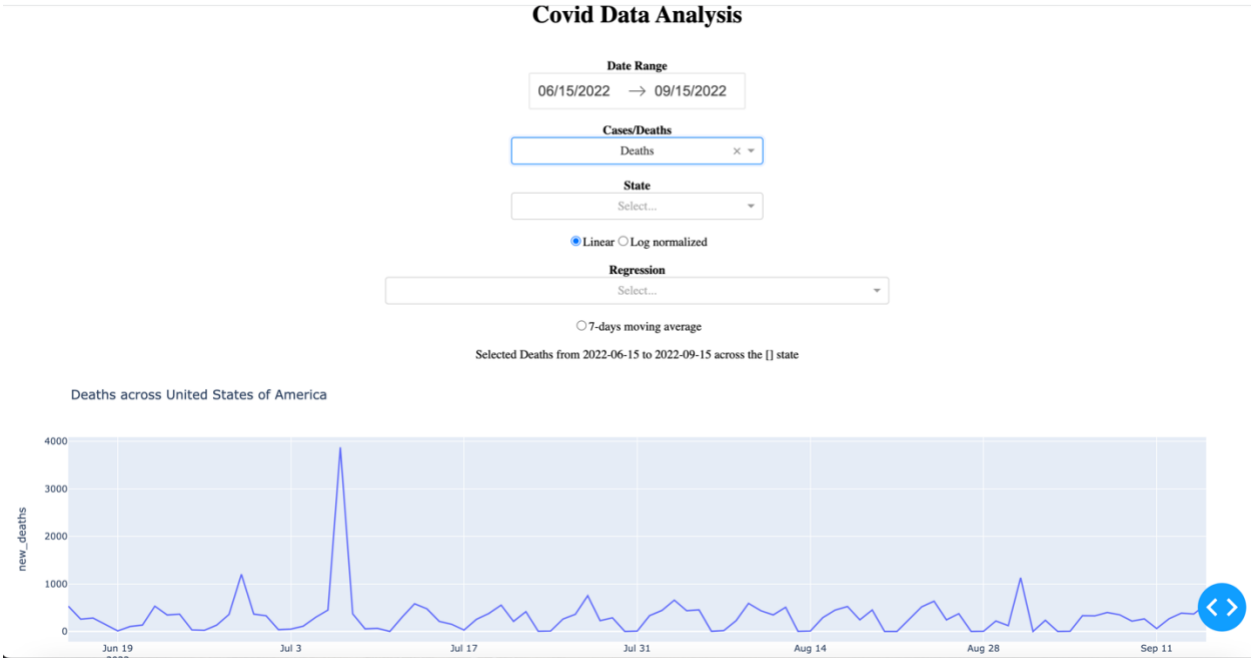
1) Default appearance of the dashboard



2) Allow for selection of date to show the trend of COVID-19 cases and deaths. (30)

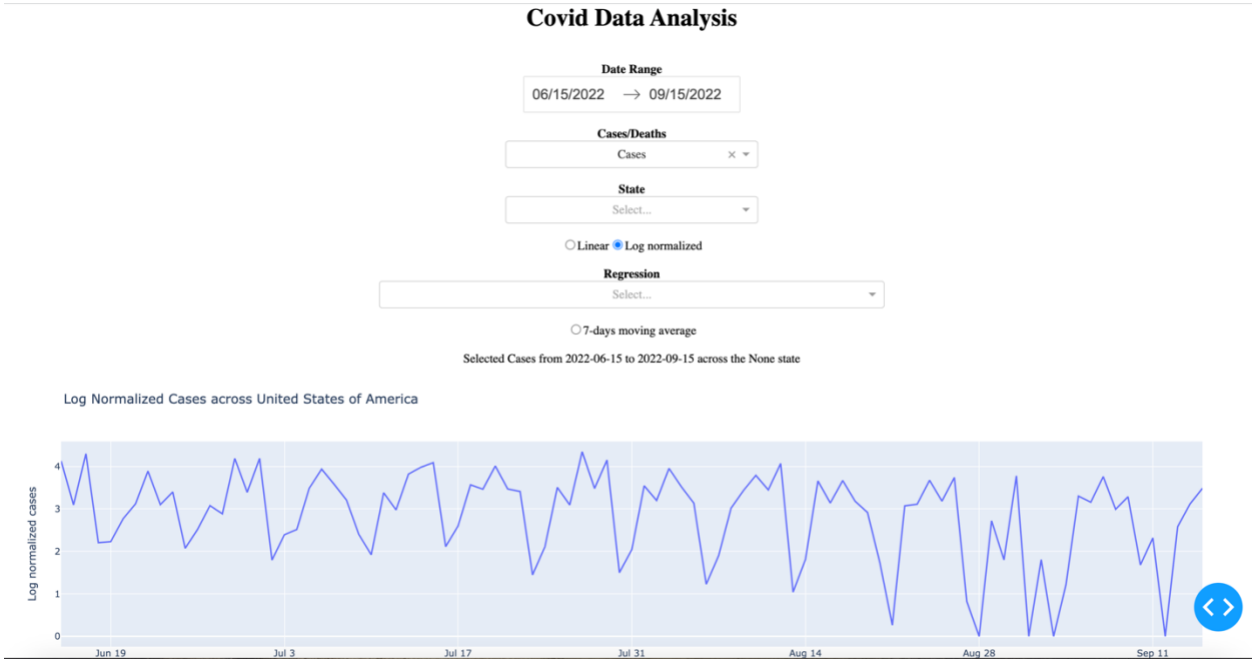
If we select the date selection from 15th June 2022 to 15th September 2022 and if cases/deaths is selected then the plot is as follows:

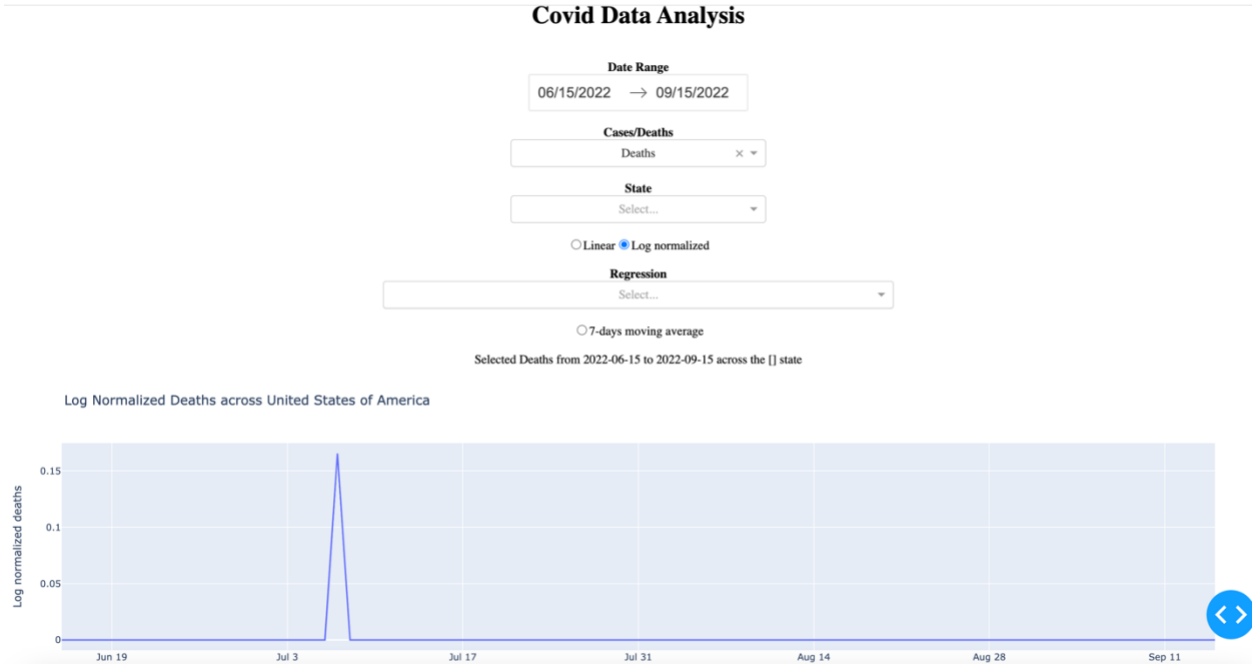




3) Allow for linear or log mode selection on the number of cases and deaths. (10)

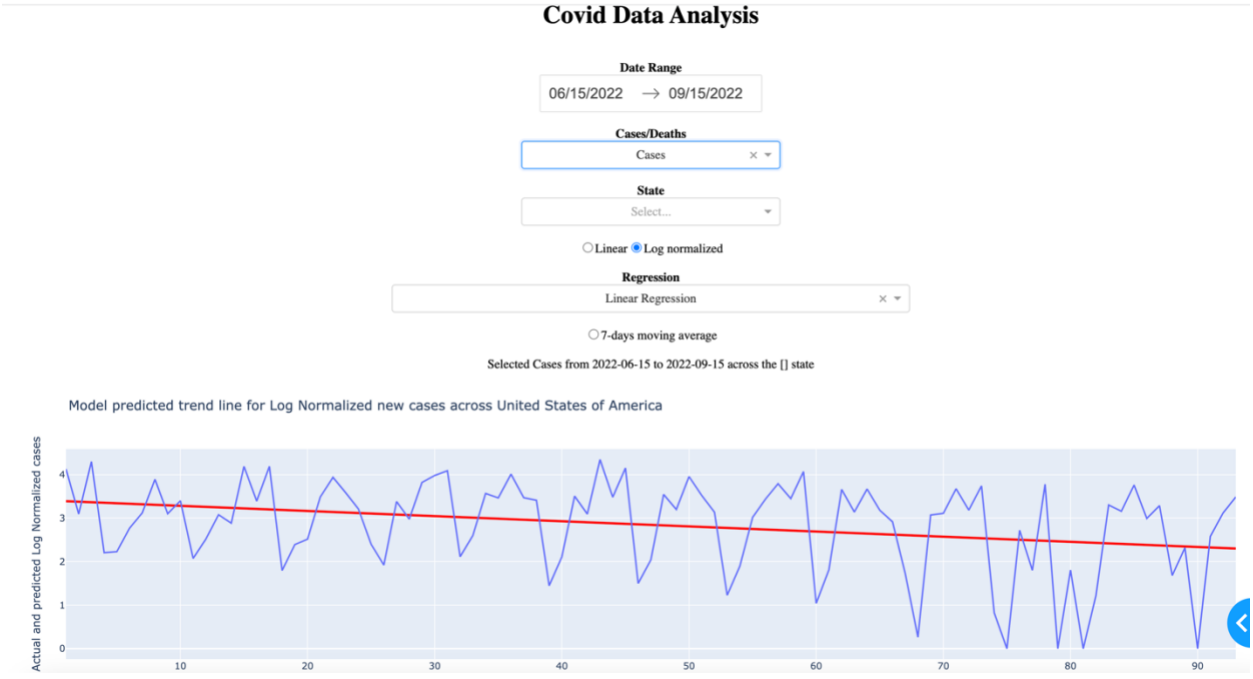
Log Normalized radio button is selected additionally for the above data



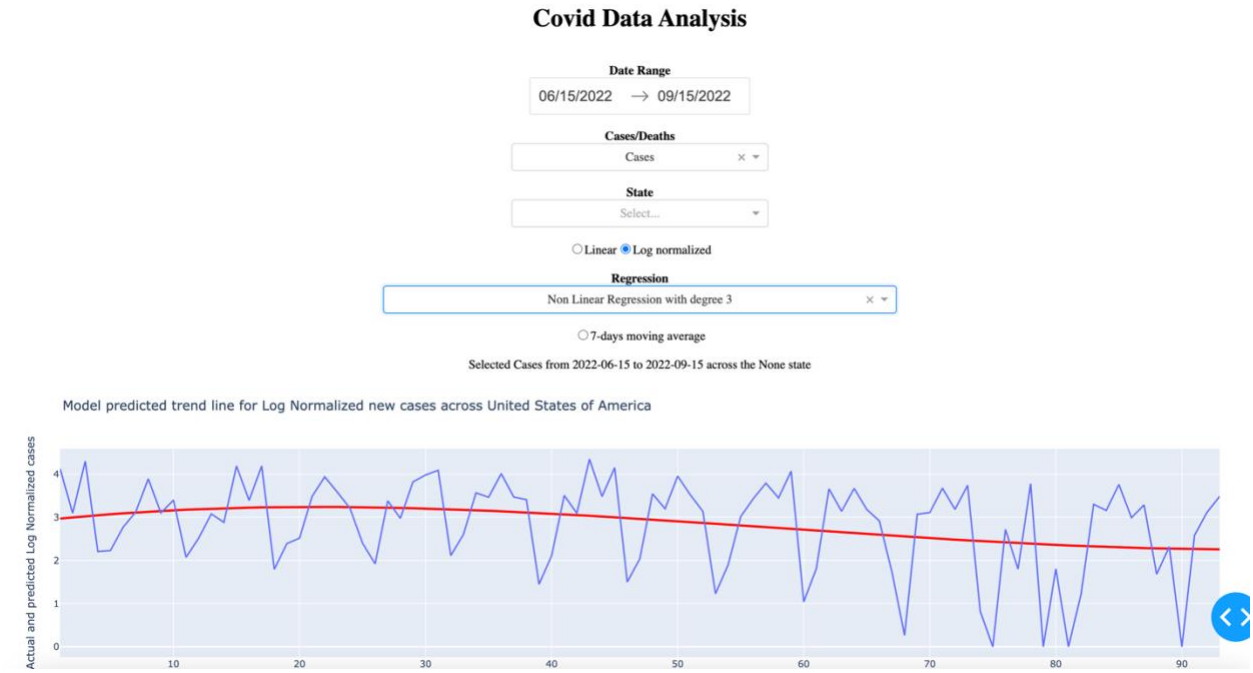


4) Incorporate your best model prediction trend line - Linear / Non-Linear. (30)

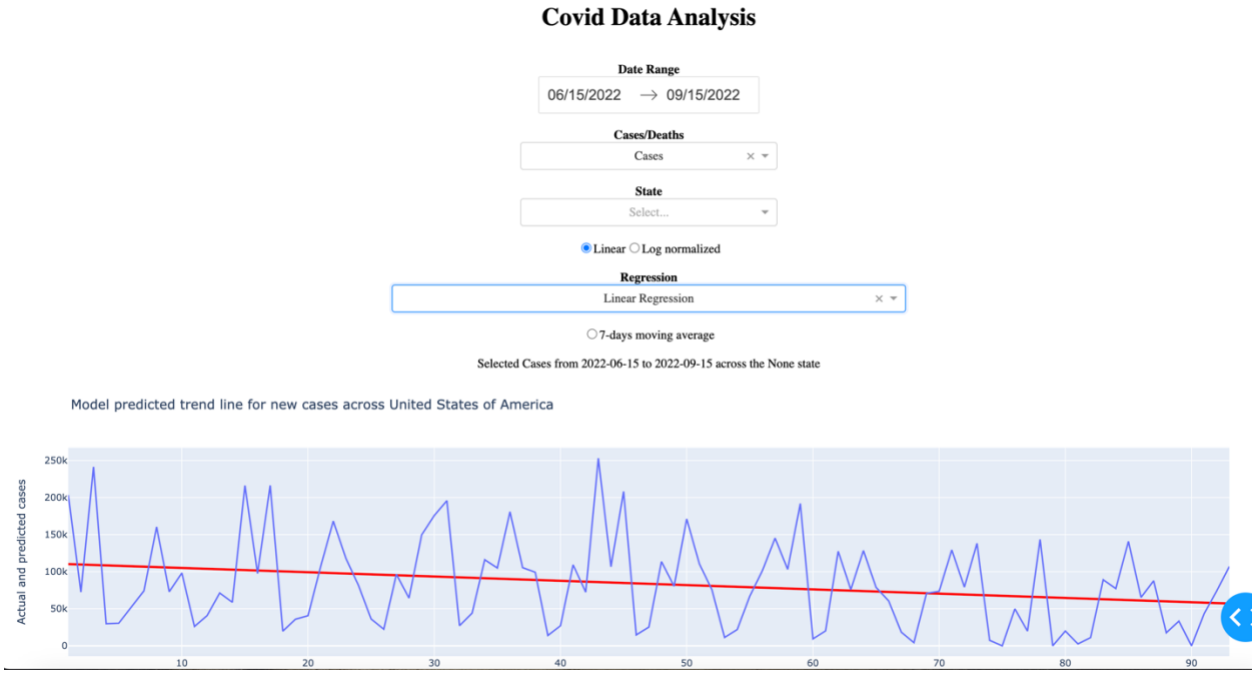
Selecting linear regression along with the above selection.

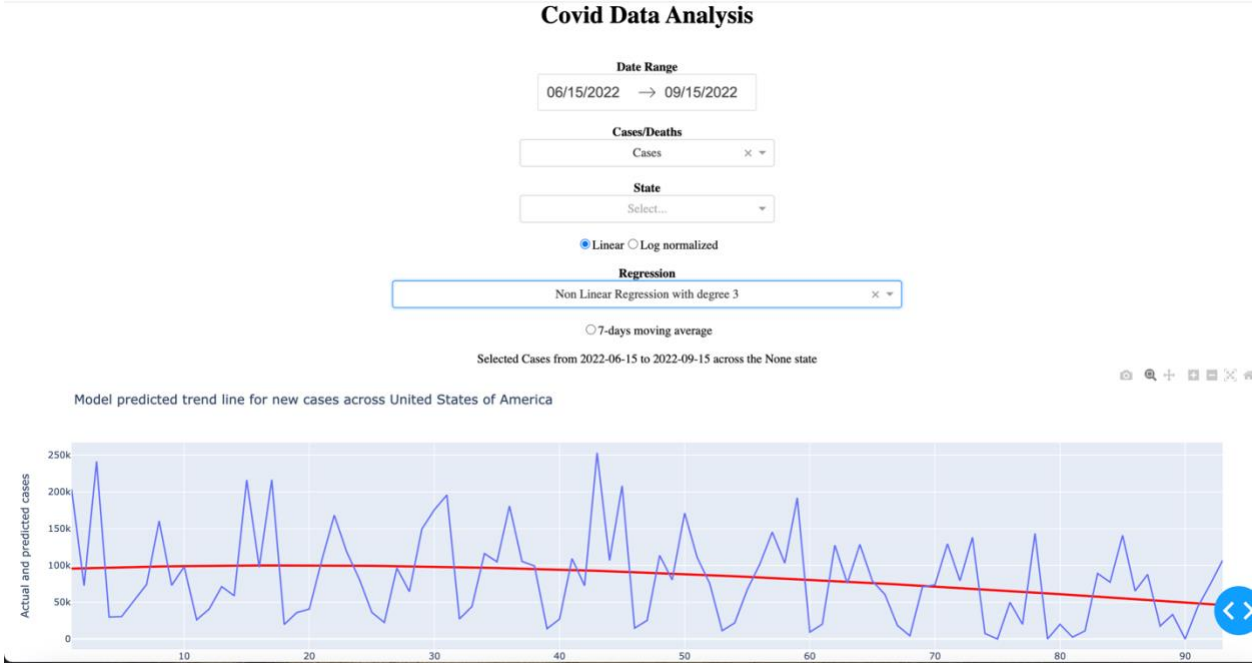


Selecting Non-Linear Regression model with degree 3



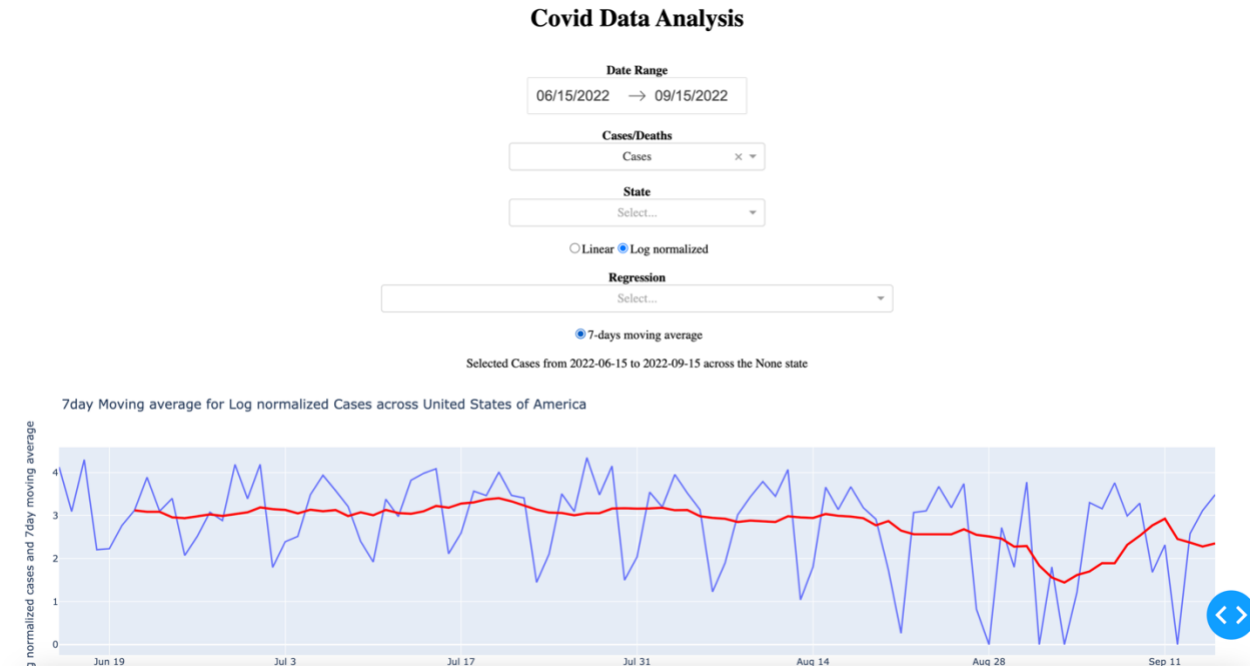
Selecting linear instead of log normalized radio button.



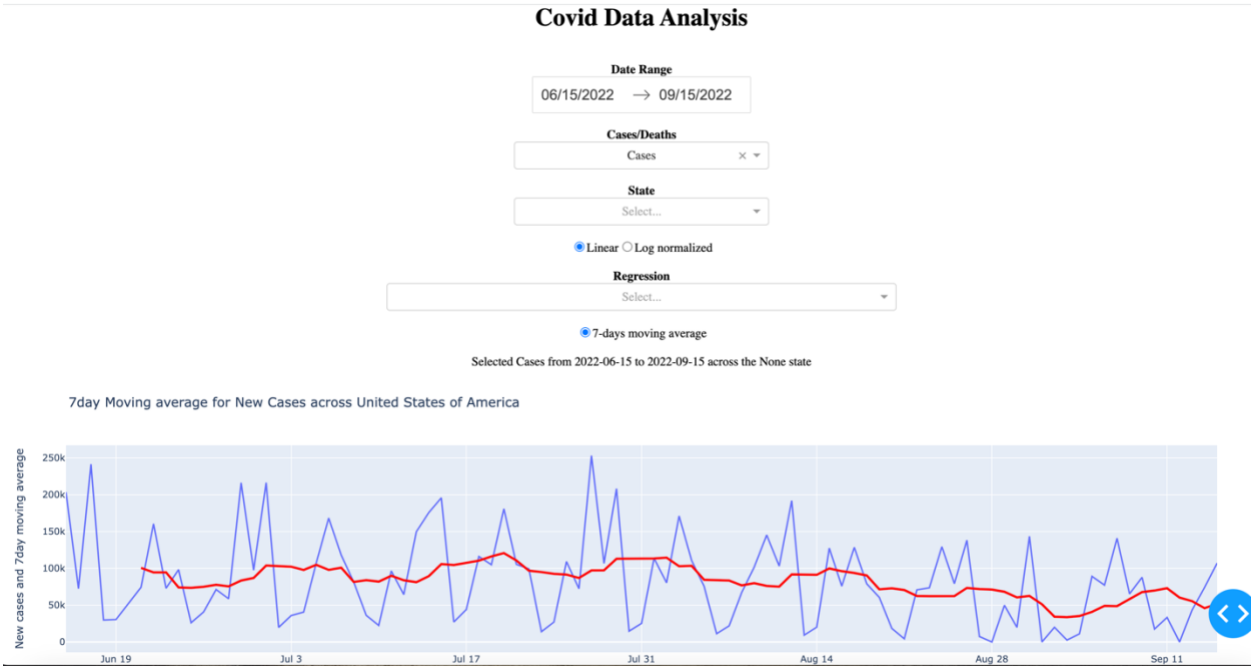


5) Plot the trend line using moving average (https://en.wikipedia.org/wiki/Moving_average). Use 7-day moving average. (15)

Selecting 7day moving average radio button along with the above selection.



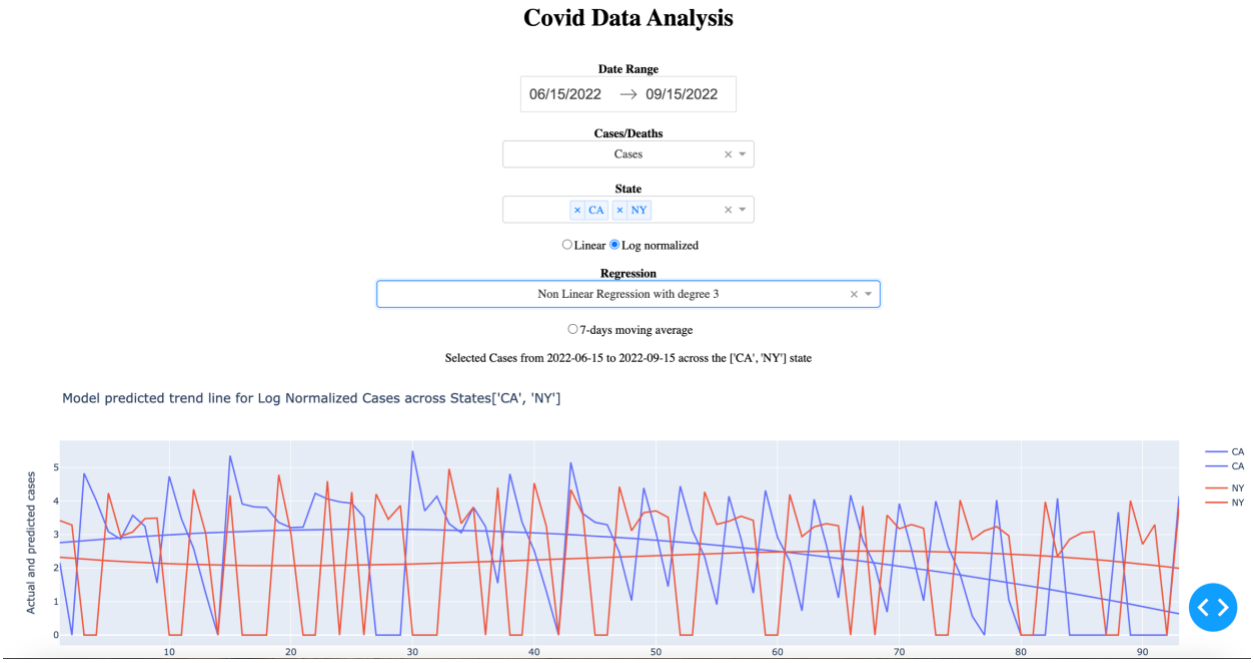
If linear radio button is selected instead of log normalized



6) Allow for selection of multiple states on the same graph. (15)

If CA and NY states are selected along with the above selection, then 7day moving a verage plot is as follows:

If Non-linear regression with degree 3 is selected instead of 7-day moving average.



Covid Data Analysis

Date Range

07/15/2022 → 09/15/2022

Cases/Deaths

Cases

State

× CA × NY

Linear Log normalized

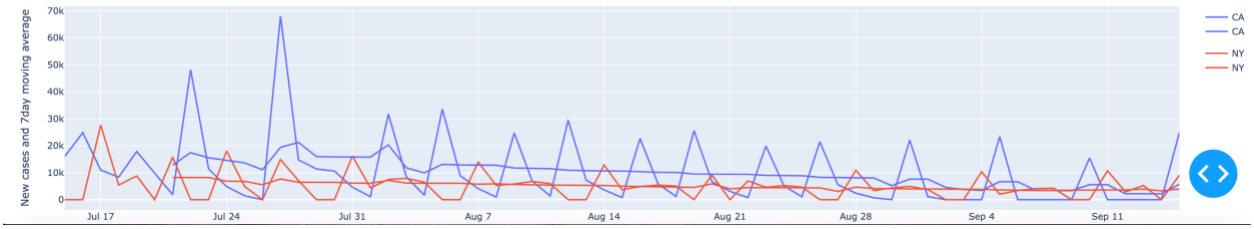
Regression

Select...

7-days moving average

Selected Cases from 2022-07-15 to 2022-09-15 across the ['CA', 'NY'] state

7day Moving average for New Cases across States['CA', 'NY']



Covid Data Analysis

Date Range

07/15/2022 → 09/15/2022

Cases/Deaths

Cases

State

× CA × NY

Linear Log normalized

Regression

Non Linear Regression with degree 3

7-days moving average

Selected Cases from 2022-07-15 to 2022-09-15 across the ['CA', 'NY'] state

Model predicted trend line for new cases across States['CA', 'NY']