

Reflection on Collaborative Activities

The activity helped me engage in collaborative analysis of a very relevant issue. After gaining some initial understanding of the problem statement and performing preliminary analysis, discussion with my cohort opened up a lot of new insights and way of thinking when approaching this problem statement.

Ariel Shurygin shared a snippet of code through which I understood the usage of `np.gradient` to arrive at the rate of change instead of subtracting from previous row to get the change in number of cases.

A lot was discussed on change point detection in time series analysis and different ways to achieve the change points. Change point marks the abrupt change in certain characteristic of data – such as mean or variance. A lot of libraries are available that help with this – such as Ruptures and Facebook Prophet to name a few. I used Ruptures, which was suggested by Tharun Kumar Reddy, to plot the change points in the Rate of Infection plot.

A lot was discussed around the usage of compliance dataset, where we could not decide how to factor in the information it provided. It was two weeks of data and didn't make much sense to use it to draw conclusions on a span on a year and a half.

There was some discussion around the calculation of Rate of Infection as well. A number of methods were proposed. One that was particularly interesting was calculating the susceptible population by subtracting the number of deaths and the already infected population (assuming a certain reinfection period), and using this to calculate the rate of infection.

I calculated it differently and plotted two ways of analysing the rate of infection –

- Analysing the change in confirmed cases over the day
- Analysing the average of the last seven days of new daily cases per 100000 people

Overall, being able to discuss, understand, and analyse how people approached a particular piece of the problem really helped shape my opinions of how to approach it. Brainstorming a problem often helps take into account the different viewpoints and incorporate suggestions that can lead to the most optimal solution.

Important insights from the analysis were:

- While arriving at a direct impact of masking policies on the rate of infection is difficult, it is clear to see that the masking mandate was removed after a significant drop in cases, and the cases began to rise once again after the mandate was removed.
- There is a lot of variation in the rate of infection – this cannot be attributed to masking policies alone. There have to be other stronger factors at play here which include vaccinations, natural immunity after first infection, increase or decrease in testing.
- There is no one method of calculating the rate of infection – it can be calculated in multiple ways – but the broader analysis remains the same.