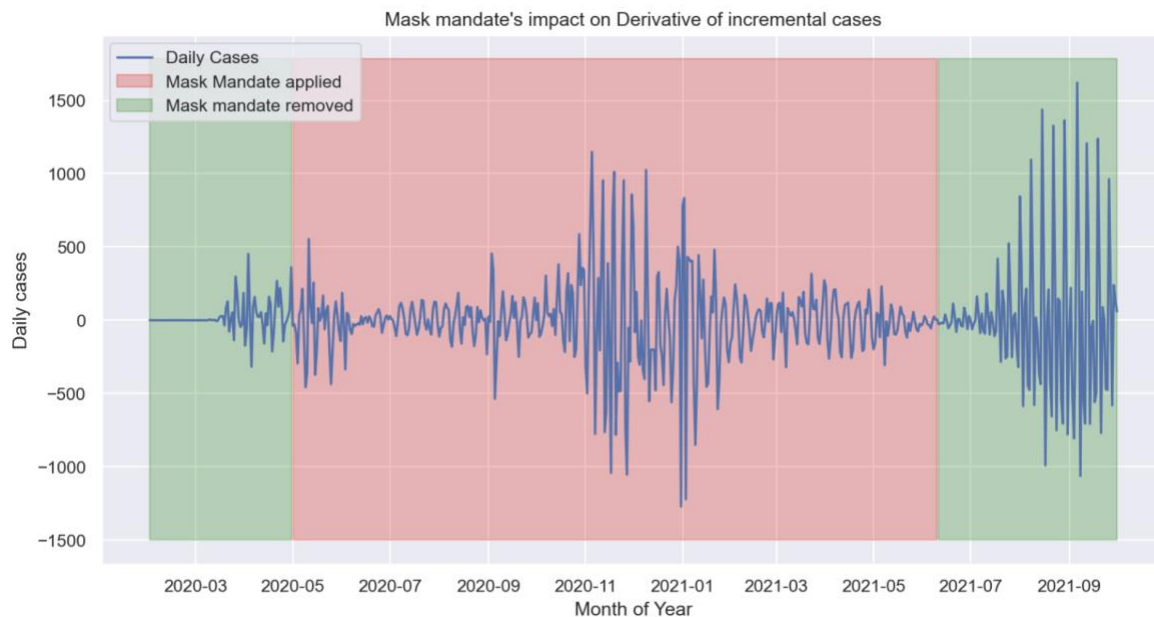


Visualization Explanation



The above figure shows a time series plot showing the changes in the derivative function of the rate of infection in Cook County of Illinois. We planned to show how the course of the disease was changed by masking policies from around February of 2020 (start of COVID-19) to October of 2022. To achieve this, we plotted a time series plot of the derivative of the rate of infection and overlayed a plot indicating the days where masking policies were in effect (range of days shaded in RED) vs when they were not (range of days shaded in GREEN).

The X-axis is the “Month of Year” column which represent the specific date we are seeing between February 2020 and October 2021. The Y-axis “Daily cases” represents a derivative of the incremental daily cases. To create this plot, we used two datasets, firstly the RAW confirmed cases dataset from the Kaggle repository of John Hopkins University COVID-19 data, second the CDC dataset of masking mandates by county. The masking mandates dataset consist of dates when mask mandates were in place vs when they were not in each county of the United States. For this analysis, we filter our data to only keep the rows for Cook County in Illinois. Since both are time series, we merge these two datasets based on their date columns (since both are measured daily).

As can be seen, the mask mandate was put in place starting May of 2020. Since that was the beginning of the pandemic, government officials must have gone ahead with this step anticipating higher spread of COVID cases. In the graph, after a slow growth rate until September of 2020, there is significant growth starting mid-September 2020 and the cases are comparatively higher until February 2021, where they start to decline again. Due to the mask mandate in place, we can hypothesize that the cases were significantly lower compared to what they could have been otherwise. Based on the section of the graph after the end of the first mask mandate, we can even prove the validity of the hypothesis since there’s a higher rise in COVID cases following a month of ending the mask mandate in June 2021.