Explanation of the Visualization

What does the figure show?

A time series showing the changes in the derivative function of the rate of infection with indication of where masking policies were in effect (or not) and whether the difference in the derivative function was significant. The time series only contains data in Honolulu, Hawaii from April 10, 2020, to August 15, 2021.

How does the viewer "read" the figure?

The viewer could distinguish the mask requirement policy first: for date in which the mask is required by policy, the background color is light yellow, while green for the date where mask is not required. It can be easily read from the graph that at Honolulu, Hawaii, the policy only changed once on April 17, 2020.

The blue line shows the derivative function of rate of daily infection at Honolulu, Hawaii.

The orange line shows the change point for the derivative function, which means there is a statistically significant difference in the derivative function before and after this date. As it can be observed that there is only one statistically significant change point for the derivative function: July 29, 2020.

What are the axes, and what do they represent?

The x-axis is the date with a range from April 10, 2020, to August 15, 2021.

The y-axis shows the Derivative function of the Rate of Daily Infections at Honolulu, Hawaii.

What is the underlying data and how was it processed?

The rate of daily infection is derived from the first derivative of the number of cases, which can be accessed from the raw-us-confirmed-cases data. By taking the second derivative, the derivative function of rate of infection is also obtained.

The mask requirement policy data came from the mask-mandates dataset, by converting the yes/no answer to 0/1, it can be plotted as the background color.