

The messaging communicated in this narrative visualization is that, in general, U.S. states and territories follow the same pattern of COVID-19 infectivity and rate of increase of cases as the United States as a whole, despite the differences in population, laws and measures (or lack thereof) enacted by different states, and how the timeline of events throughout the pandemic have impacted the US. This message is enforced by the graphs shown in the visualization, as well as the annotations and tooltips present.

My visualization follows a martini glass narrative structure. It starts with content that is author driven, which in this case would be the graphs showing data for the United States as a whole, and then it reaches a jumping-off point (selecting a state or territory) into reader driven content, which are the reflected graphs of data of the state selected by the user. The user is aided in navigating the visualization through the use of text in the web page. It gives instructions on how the user can interact with the scenes and how the user can change to different scenes in the visualization. Annotations are also implemented in directing the user to focus on an important part in the scene, thereby helping the user see the connection in the national data and the state data.

The first scene in the visualization are the two graphs for the total number of cases of COVID-19 and the daily rate of increase of cases of COVID-19 for the United States. It is a static scene that will not have its state changed through the course of the visualization. All the subsequent scenes are the same graphs that are in the section for the national data, however, implemented to visualize data from the user selected state, of which there are over fifty options. The scenes are ordered this way to allow the user to compare the data of the selected state with the national data.

As mentioned before, annotations are implemented in this visualization. The line graph of the total number of cases in the U.S. has a square annotation between the dates of September 8<sup>th</sup>, 2020 and March 1<sup>st</sup>, 2021 to give attention to the spike in COVID-19 cases around that time. That same annotation is also written in the state graph to help the user easily identify that time period, and to see if the selected state had a similar spike in cases around that time as well. All the scenes of states that the user can select have that same annotation, so the annotation doesn't change as the user transitions between scenes.

The bottom two charts in the web page can be classified as a parameter in visualization. These charts are affected when the user changes the state variable, which in this case are the state/territories of the U.S. that the user can select through the dropdown menu, funny enough. When a state is selected, the charts reload with the data that corresponds to the user selected state. Another parameter in this visualization are the tooltips in the line charts and the bar charts. When the user hovers over either of the charts, the tooltip's state changes from invisible to visible and the user is able to move the mouse through the chart and change the position and information of the tooltip. But when the user moves the mouse out of the chart, the tooltip's state changes from visible back to invisible. A third parameter is the zoom level of the bar charts. The state of bar chart is enlarged when the user zooms in using the mouse, is changed back to its original state when the user zooms out, and position changes when the user drags across the chart.

The main trigger of the visualization is the dropdown menu that the user can use to select a state, however some other triggers include using the mouse to hover across the charts to show the tooltips of the charts, and using the mouse to zoom across the data in the bar charts. All of these triggers are communicated through the text on the web page. This text tells the user what will happen

when a new state/territory is selected, what will happen when the mouse is hovered over either the line or the bar charts, and what will happen when the user zooms in on the bar charts.