

COVID 19 Narrative Visualization

It's important to track the confirmed, death and test cases that states are recording with COVID 19 infection to gauge the spread of the virus in the U.S. This should include the reported date and an exact number of cases so that people can generate proper charts to analyze. I used datasets from Johns Hopkins University of Medicine [1] and CSSEGISandData Github repository for COVID 19 [2] and derived valuable data for this visualization: total confirmed, death and test cases and numbers of each date. These datasets should tell us what the latest trends of infection are and how the infection is changing daily.

To professionally design a narrative visualization, I followed guidance written by S. Edward and J. Heer [3] on visual narrative tactics and narrative structure tactics.

I desire the most commonly used martini glass narrative structure where the message is delivered to the user by using questions and written articles without allowing exploration until the end. In this way, I, as an author, will guide the user through the visualizations, so that the user can fully comprehend the data and its means. I used a combination of D3, HTML, and CSS to enable and disable the popup dialogs at the beginning of the visualization and provided limited interactivity. There are five dialogs in the entire visualization. The user must click the 'next' button on the dialog to acknowledge the message and proceed. Once the author intended narrative is complete, the visualization will open a reader-driven stage where the user is free to explorer and interact data.

For visual structuring that communicates the structure to the user and helps orient the user from the visual narrative tactics, I prefer a design strategy called consistent visual platform where changing the content of the panel only without altering the general layout. For instance, I

used logarithmic colors (red, orange, and green) to display confirm, death, and test datasets on the GEOJSON map respectively. When the user selects an option on the selection box, the respective color will be applied to the map without changing the shape and position of the map. The same idea is being used on line charts if the user clicks on the map for demand on details.

I created six scenes where three scenes are reserved for the GEOJSON maps and the other scenes are reserved for the corresponding line charts that are going to display details of the COVID 19 data on the specific state of the U.S. The user will see the map scenes first and they are ordered by confirm, death and test datasets since the majority of the visualizations, including the Johns Hopkins University one, are ordered in this way. If the user wants to know details of the datasets, they need to click on the state of the map to see the corresponding line chart.

All scenes contain annotations that emphasize key observations, parameters that filter the datasets, and define the state of the scenes and triggers which connect user actions to changes of state in the visualization.

Annotations follow a consistent template which comprises a yellow dot that is pointing on the emphasizing target and a yellow rectangle box that contains key messages because I realized changing the annotation template may distract users and may disorient the users while transitioning to the other scenes. All scenes will have annotations especially on the state that has the highest data records.

Parameters and triggers are often used in combinations. My parameters are embedded in the elements of the visualization – selection box and each state territory. It has confirm, death and test options for confirmed, death and test cases. Once the visualization is being initialized by browsers, confirm datasets parameter is applied on the map and the line chart. The user can

switch the parameters by choosing options in the selection box and clicking the territory on the map and these actions involve triggers.

Triggers on the components will be activated whenever the parameters are set or certain actions the user performed. These actions are mouse hovering, moving, in and out of the components. Each of the actions will trigger a popup on the scenes.

Lastly, the combination use of the above techniques helped me creating the power visualization tool. I can easily navigate the data and digest the analysis easily with annotations and diagrams. Unfortunately, by the time I am writing this essay, death and confirmed cases are skyrocketing on all the states of the U.S.

References

- [1] <https://coronavirus.jhu.edu/testing/states-comparison>
- [2] https://github.com/CSSEGISandData/COVID-19/tree/master/csse_covid_19_data/csse_covid_19_time_series
- [3] Segel, Edward, and Jeffrey Heer. "Narrative visualization: Telling stories with data." IEEE Transactions on Visualization and Computer Graphics 16,(6), 2010), pp. 1139-1148.