Megan Masanz CS498 – Data Visualization (mjneuman)

Martini Glass at url: https://megado123.github.io

Messaging.

This martini glass narrative is communicating that as a consumer a user should be considering why airlines are late, not just the fact that they are late and put that information into consideration when selecting a airline to fly.

Narrative Structure.

The structure of the narrative provided followed a martini glass structure. The consumer is led down a specific path with an overview of the data, airlines late causes displayed, and then finally allowing user driven data exploration during the final visualization.

This is presented in the figure below:

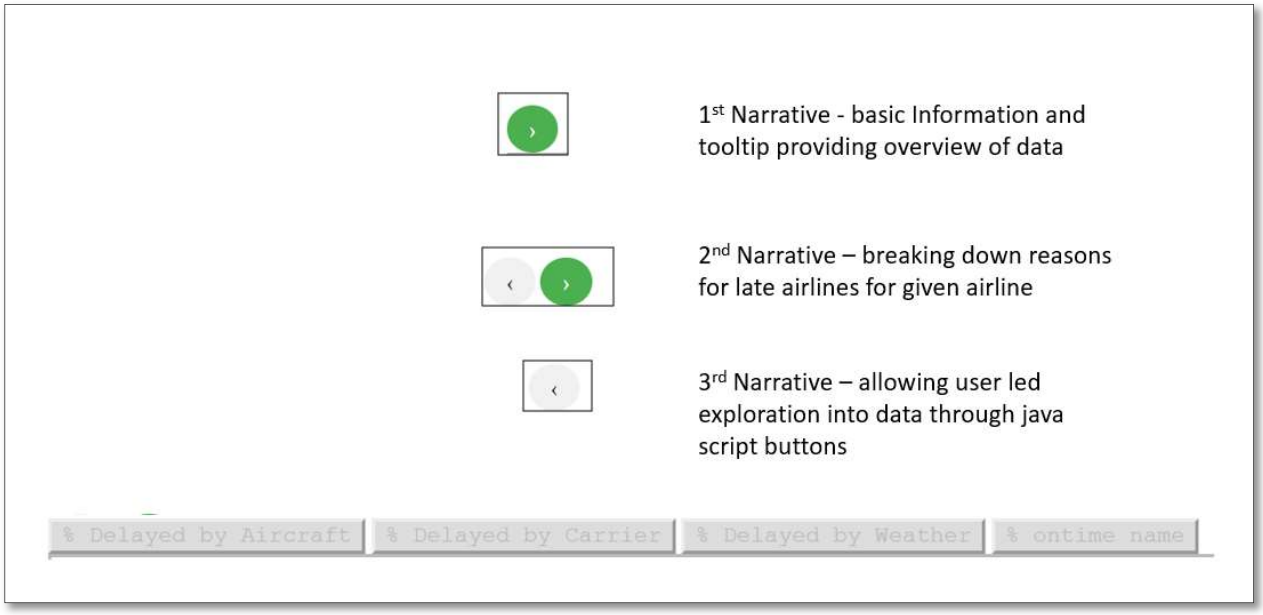

Figure 1-1 – Demonstrating Martini glass exploration enabled through visualization.

The martini glass narrative drives consumers through a set of scenes designed to bring the user from a basic understanding of the data, into asking questions that will enable them to select an airline based on the dataset.

Visual Structure.

Scene 1:

In the first slide, the user has limited ability to drill down into details. It is author driven information providing a basic insight through visualization that airlines that have a lot of flights, are going to have a higher number of late minutes, bringing the user to the conclusion that there is more to the store. Users will naturally be drawn to a few outliers in the data – this is what the scene is intended to highlight, where there are a lot of flights, and a lot of late minutes, which leads the user to an understanding that high late minutes would happen on major carriers since the number of flights that are providing is quite high. This scene was selected first to follow Schneiderman's mantra and provide an overview of the data to a user first. The transition is provided with a next button. A scatter plot was selected to provide an overview of the data, and given it is 2 quantitative variables, it provides queues based on position, as well as clustering the data to provides queues based on density.

Scene 2:

In the second slide, the user still has limited ability to drill down into the details. It is author driven information providing a basic understanding that the late time can be broken up into buckets, and those buckets themselves should be explored. This slide was selected as second because a user is drawn to the break down of the late codes by reason which leads into a desire to explore the data based on this information, which is what the scene intends to highlight. The transition is provided with a next and previous button. This scene used a stacked bar chart given there were several accumulating dependent variables making up the overall percentage for an airlines being late.

Scene 3:

In the 3rd slide, the user is given the ability to explore the data in a new way. Breaking up the data provided in scene 2 – but in a format enabling the consumer to answer a specific question. The calculated data is sorted by airlines, so a user can determine which airline was impacted the most based on a late reason. This is selected as the last slide because it is designed to answer the question that the previous slides have directed a user to ask. It also allows for exploration into the dataset for consumers ensuring the martini glass structure was followed. This scene sorts the data by the measure of a given percent to prioritize the data to allow a user to see which airline has been most impacted by a given late reason, as well as their overall percent. This horizontal bar char takes advantage of length – providing a visual queue of the data, but also uses position given it sorts the datasets to lead the consumer to understand very quickly which airline is impacted the most.

The scenes promote a visual consistency by the structure provided on each scene with consistent navigation buttons, a over-view text provided above the given chart, as well as consistent color schemes for airline carriers leveraged across the charts to keep the view oriented between the scenes.

Annotations.

The annotations provided where the tool-tips as users hover over information in a given scene. Since the information was author driven it was not desirable to leave annotations from one scene to the next given the consumer was led down a path varying what within the dataset was explored. The template then was to provide the user with information specific to that scene, as the next scene would provide

the information a user would be interested in exploring. Within each scene above the chart, a paragraph is providing information to a consumer about the scene which can also be considered annotations for a given scene.

Parameters.

The scene number which is controlled the the navigation buttons shown below is a parameter of the narration.

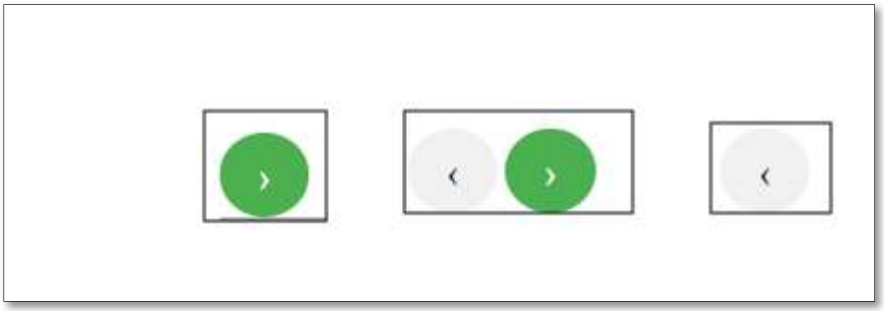

Figure 1.2 – scene parameter

In addition to the scene number which chart to display (Scatter, Stacked Bar, Horizontal Bar Chart) are parameters of the visualization.

In the final slide where user driven exploration is encouraged, there are additional parameters provided by the buttons which alters the calculations done on the dataset to slice the dataset according to the user's data exploration as shown below in Figure 1.3 that leverage D3 transitions as the dataset has changed to ease the viewer into the new data.

Figure 1.3 data set parameter

Triggers.

The pressing of a navigation circle triggers moving from one scene to another shown in Figure 1.2. As shown in Figure 1.2 the user is provided an affordance that the next scene is available with a green button, and the user to less drawn to the fact they can reverse given that button is a grey color with the use of color to provide an affordance. As shown in Figure 1.4 below, the user is given an affordance that the dataset has been altered by the color variation on the button, also providing a queue that the dataset can again altered by pressing on another button.

Figure 1.4 – Affordance to indicate the dataset has been altered based on current button press

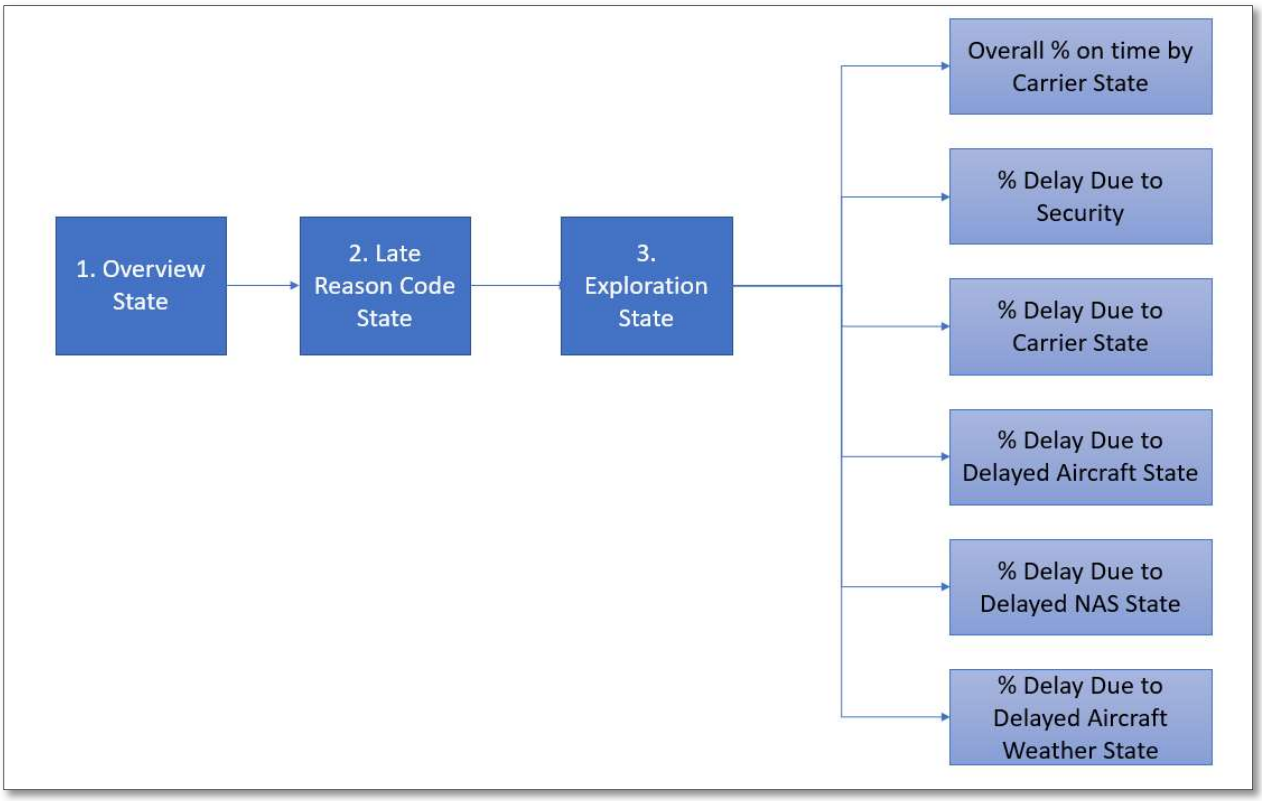

Figure 1.5 – Visual Narrative States

Figure 1.5 represents the states within the narrative. The navigation buttons trigger moving from one state to the next from 1-3. The java script buttons on the 3rd narrative slide enable moving into the exploratory states within the final scene.

Code Repo

https://github.com/megado123/megado123.github.io

Acknowledgements

For the stacked bar chart the code found at: http://bl.ocks.org/mstanaland/6100713 was leveraged. For overall training the plural sight course D3 Data Visualization Fundaments was leveraged. https://app.pluralsight.com/library/courses/d3-data-visualization-fundamentals

Scene Screenshots for reference

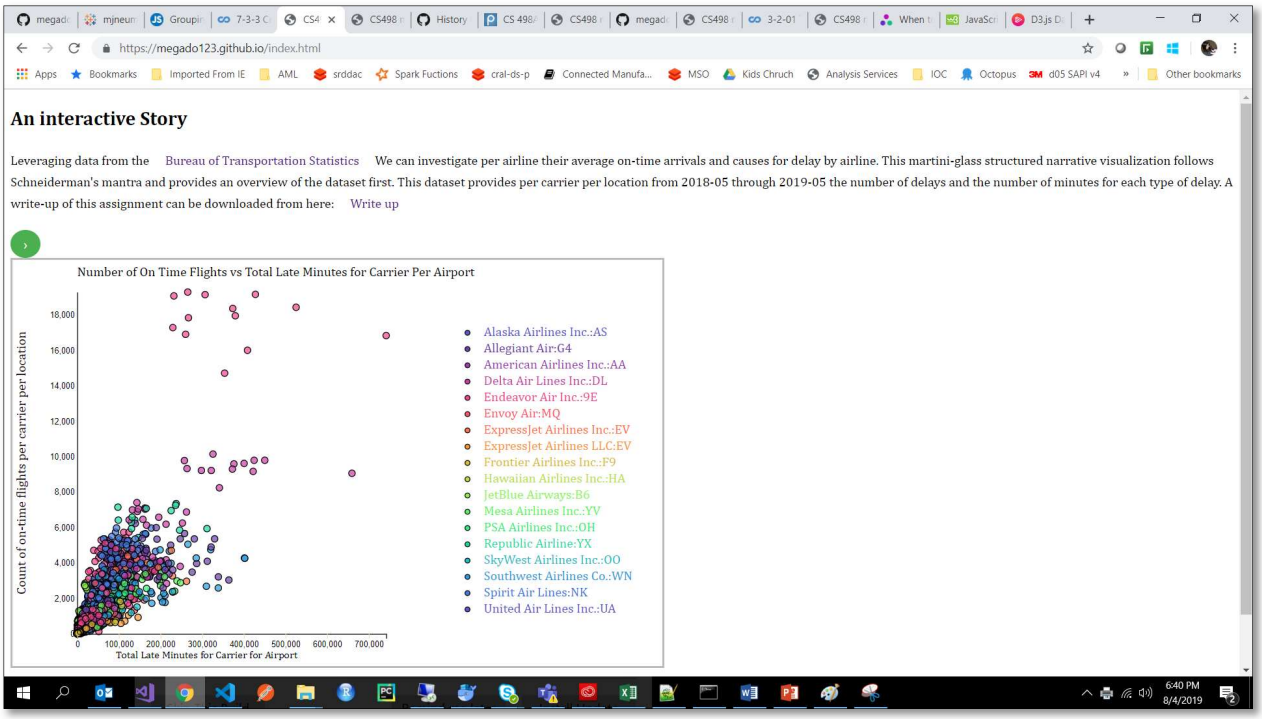

Figure 1.6 Scatter Plot First Scene

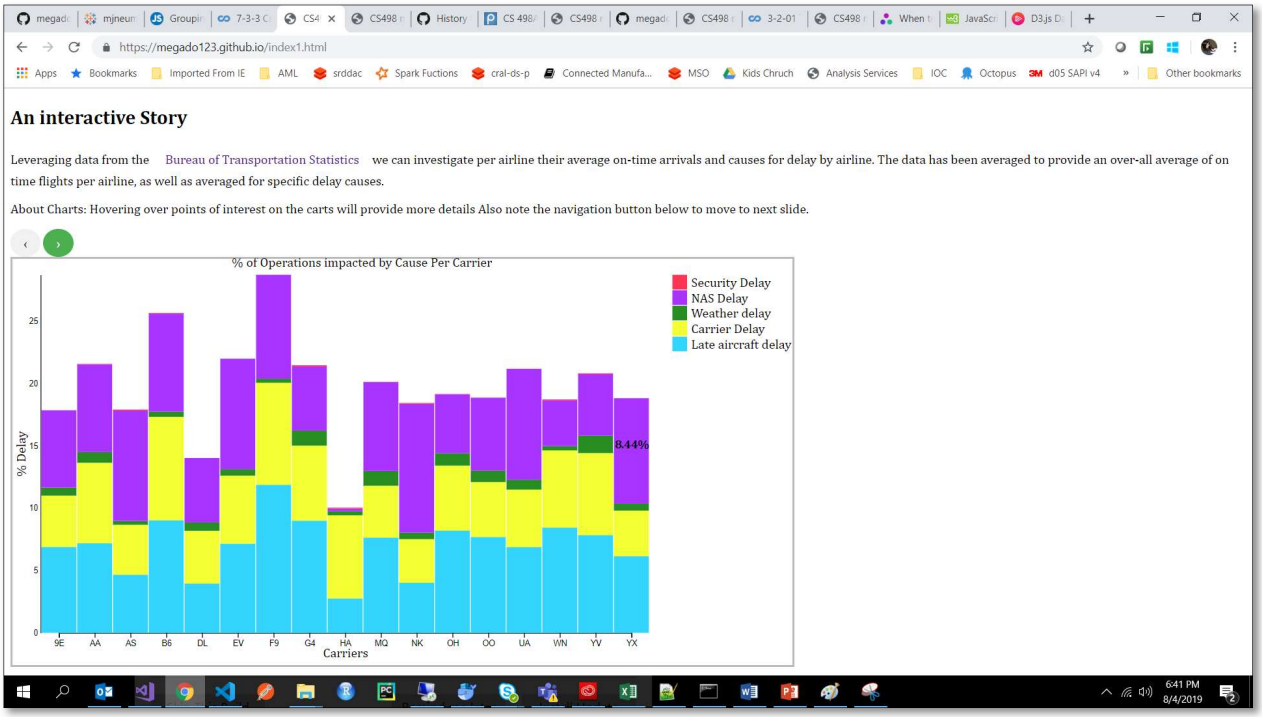

Figure 1.7 Stacked Bar Chart

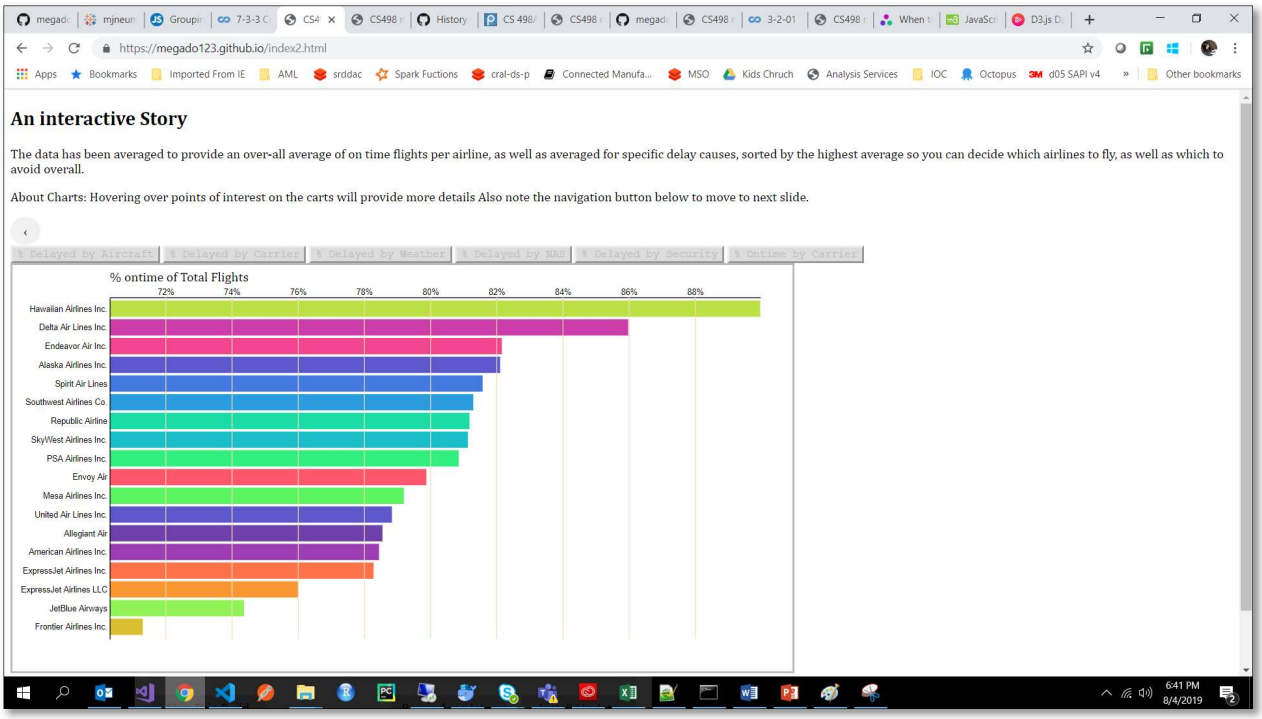

Figure 1.8 Sorted Horizontal Bar Chart

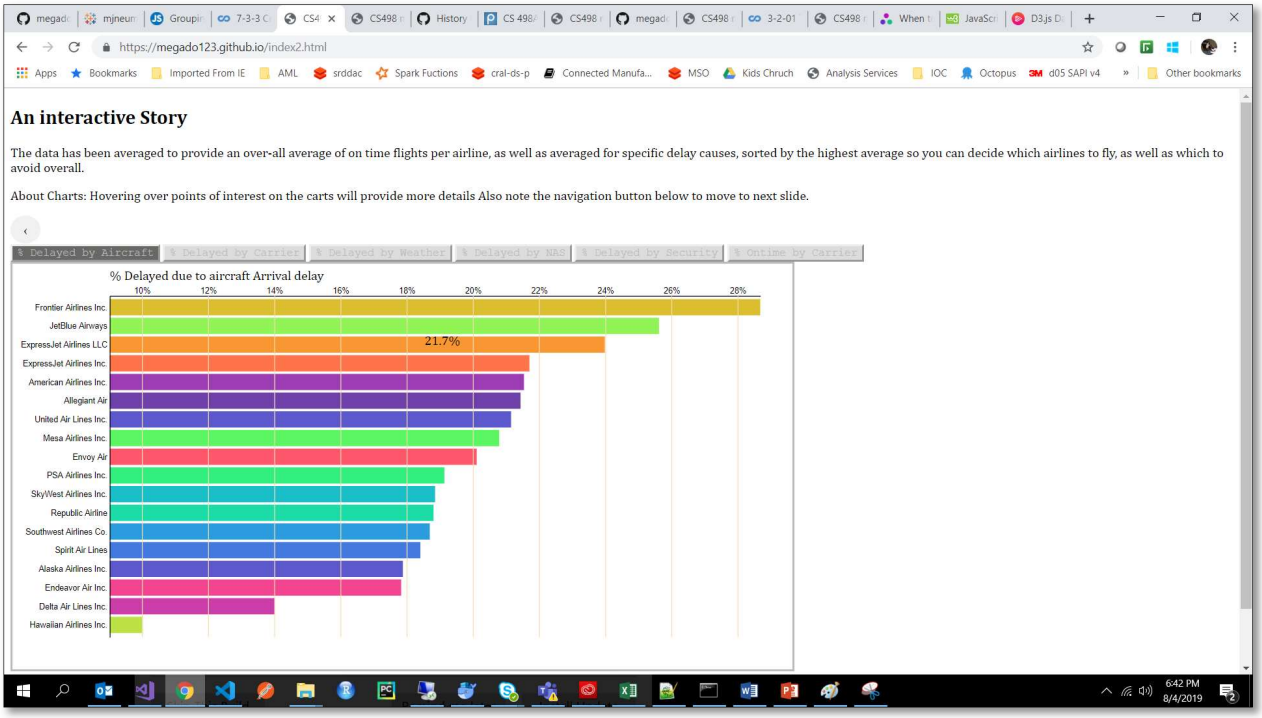

Figure 1.9 Sorted Horizontal Bar Chart with State Change due to trigger