Narrative Visualization Project Write-up

1. Messaging

The message of this Narrative Visualization is that on the Spotify Top 50 Daily Playlist from March 2023 to July 2023 there seems to be a positive correlation between the number of times a song appears on the playlist and the average track popularity of the song. This could mean that if a song appears multiple times on the playlist, many people tend to listen to the song and vice-versa. Hence the song has a high volume of listeners and high popularity. On a similar note, if a song has a low track popularity, not many people have listened to the song and there is a high chance it won't be on the playlist many times either, or vice-versa.

2. Narrative Structure

The Narrative Visualization follows the structure of a Martini Glass. This is because the first two scenes are author-driven, showcasing the downward slopes indicating declining song popularity and frequencies on playlists. Furthermore, some songs occupy top positions on both charts indicating a trend between the two quantitative variables of the song: the "Track Popularity" and the "Times Appeared". Tooltips on hovering over a highlighted bar provide more information about that song such as its Duration, Artist, Album, Date Released, and much more. The third scene follows an interactive template, allowing the user to explore how a song's track popularity and position on the playlist have changed over a period. This scene allows free-form user exploration, inviting the user to check out different songs and explore their interests to see how certain songs have performed to satisfy their curiosity. Furthermore, this scene provides the perfect amount of curiosity and exploration to the user for them to understand the message of the

Narrative Visualization in the concluding scene displaying a positive trend. By following author-driven content terminating at user-driven exploration with a concluding message, this Narrative Visualization follows the structure of a Martini Glass.

3. **Visual Structure**

In the first two scenes, a bar chart is used to depict different songs and their metrics such as the number of times they have appeared on the Spotify Playlist and their track popularity scores which is a relative measure based on how many listeners a song has and how frequent the song is listened to. The bar charts help to visualize the data in a way that makes it easy to notice trends when sorted data points move in a particular direction. It also makes it easy to identify patterns between the two bar graphs in the first and second scenes by identifying common songs that have high track popularity and frequencies. The text above the scene provides an overview of the information that is underlying in the two graphs and the annotations aid the user in understanding data points and trends. The buttons on the top right and left make it easy for the user to navigate between scenes efficiently and clearly. The third scene contains text to ignite curiosity in the user by providing him suggestions to select songs and visualizations to view different charts. The legend depicts the form of each chart making it easier for the viewer to understand how a variable changes with time. The line chart changes in response to the user selecting different songs and a dependent variable, containing a tooltip to see the precise value of the dependent variable on a particular date, providing additional context to the user. The concluding scene provides a final remark about the trend that exists based on the data and displays a scatterplot with a positive regression line that helps the user understand the positive trend that occurs. The bar charts have a filler animation that attracts the user's

attention to the data points immediately. Furthermore, the colors, steel blue and red, that are used as a color scheme to represent “Times Appeared” and “Track Popularity” respectively are pleasant and engaging, highlighting the bars and aspects of the line chart that make it more engaging for the user to interact with. The color scheme is consistent throughout the Narrative Visualization and allows the user to remain oriented throughout the story by understanding contextual elements. The bar values that indicate the respective variables are represented by their respective colors to ensure the user understands the meaning behind each value. This scheme also makes sense because the same variables are repeated through scenes, to create a smooth Visual Structure that the user can understand easily. Through these measures, the elements of the Visual Narrative provide for an effective Narrative Visualization.

4. **Scenes**

The scenes of the Narrative Visualization are two bar charts depicting scenes 1 and 2 which display data based on different dependent variables (Times Appeared and Average Track Popularity). The third scene is an interactive dropdown that displays a line chart so the user can explore different song trends that they wish while retaining context to the song’s overall values for the two variables. The concluding scene displays the correlation between variables, answering the question posed in the previous scene after user exploration is complete. The ordering of the slides follows the pattern of the Martini Glass, where the first two scenes depict the data while pointing out trends that occur using annotations. The third scene exhibits interactivity to allow for free-form exploration for further data observation by the user. To improve the delivery of the message of the visualization, the concluding scatterplot demonstrates the correlation of the variables

used to explore trends across time from the previous scene. This ordering follows the Martini Glass structure and is the most effective way to deliver the message.

5. **Annotations**

The template used for the annotations was lines drawn over regions of the bar chart that slope at an angle to show the trend of the songs that had decreasing values due to a particular reason conveyed by the text above the line. The text above one of the lines contains song names and a metric which are bolded to draw attention to the important details of that annotation that are relevant to future scenes and data to display trends and correlation. The annotations help point out the trends in the data and allow for reference so that the user can explore the songs that are contained in the trend in the interactive scene. The annotations follow the same format by highlighting the songs in the two graphs, but the songs change. The downward sloping line that highlights the trend also contains different text as the reason for the downward slope is different in both graphs, which is conveyed by the annotation. Further information about the songs is conveyed by tooltips that are activated by hovering over a data point or bar.

6. **Parameters**

The parameters of the Narrative Visualization are the slides, the variables used such as "Track Popularity" and "Times Appeared", the songs, the period to consider the popularity of the song on the line chart, the bar charts animating on opening the first and second scenes, and tooltips appearing to provide more information on songs when hovering over a data point or bar. The states of the narrative visualization are the various scenes, and the parameters define the state by providing the values for the charts to form bars, circles, or lines. The parameters construct a downward-sloping bar graph by acting

as a filter for data points to change their value. The various charts produced in the Narrative Visualization are the states defined by the parameters such as the variables “Track Popularity”, “Times Appeared”, and “Dates” which filter data and help to convey the message of the visualization.

7. **Triggers**

The triggers are clicking the buttons that change the scene. Hovering over a bar or circle produces a tooltip that conveys more information about a song. Selecting songs and variables from the dropdown filters the chart according to the change in the variable. Moving to a scene with a bar chart causes the bar chart to animate on entry. These are some of the triggers that connect user actions to a change of state. In every scene, any form of user interaction, including tooltips is offered to the user and the information is provided via text contained in the narrative sections of the visualization below the titles. The dropdowns are elegantly displayed at positions accessible to the user to make it easier to select songs that are ordered alphabetically. Data points are also highlighted by hovering over them, making the visualization appealing and affordable for the user to interact with.