Executive Summary of Research Assessment #7

As I begin to work on my Final Product for ISM, I wanted to expand my knowledge on data visualization as it will be the main focus of my project. This research assessment covers my research on the most effective and successful visualizations.

Research Assessment #7

Date: January 26, 2021

Subject: Tips on Great-Looking Data Visualizations

MLA Citations: "Tips for Creating Effective, Engaging Data Visualizations." *Tableau*, www.tableau.com/learn/articles/data-visualization-tips.

Assessment:

As I continue my research into data visualization, I wanted to get to know how to make the best possible data visualizations as those visualizations will be vital to my Final Product - and for other personal reasons too. Once more, I turned to the Tableau Software company on an article called *Tips for Creating Effective, Engaging Data Visualizations*.

Based on the information I have gathered from my previous research assessment (Research Assessment #6), I know that data visualizations need to be able to convey a brief, yet compelling story to its audience. Now, I would like to dive deeper into data visualization to further my understanding of how to make those visualizations effective.

In the first two paragraphs, the Tableau article once reiterated the idea that the visualizations need to tell their viewers the story of the data that it represents. After giving the brief introduction of the purpose of creating enticing data visualizations, the article provides a list of questions that should be considered when creating visualizations. The first question

that the article mentions is about who the audience will be for the particular visualization (Tableau). This needs to be considered because - in a future scenario - let's say I need to make a presentation to a future team of co-workers, I would need something that piqued their interest. Or similarly, if I am presenting something at a meeting for the board of directors at a company, I would need to curtail the presentation with creative visualizations that both show my unique style and professionalism. The second question that the article mentions is about the kinds of questions that the audience will have as the visualization is presented to them (Tableau). Going back to the future scenario I discussed earlier, I would need to plan ahead for appropriate questions that may arise about the visualization as there may be some aspect of it that is of utmost importance to be discussed. The next question that this article mentions is about the answers to the questions that the viewers may have about the visualization (Tableau). Once more, going back to the future scenario that I discussed twice earlier, I would need to highlight the answer in some sort of way to ensure that the answer can captivate the viewers' attention. There are a few more questions that this article talks about that are vital to the success of a data visualization. In the next few sections, the article highlights the five most important things to keep in mind while creating a data visualization.

The first key aspect to creating a successful visualization is to "choose the right charts and graphs" to visualize the information that the person wants to present (Tableau). There are certain rules associated with certain charts - I will go into more detail of the various charts that the article discusses. Bar charts (or more commonly known as bar graphs) are very useful when it comes to "comparing categories with a single measure" or variable (Tableau). This is true as I can attest to creating bar graphs on many occasions for science classes! As for bullet charts, they are designed to "show progress against a goal" (Tableau). I personally haven't heard of bullet charts until now, so this might be a visualization that I could learn more about through my Final Product work. Line graphs don't compare things, rather they are meant to "visualize change" over the course of time. I have used this type of visualization before in many of my math and science classes, so I definitely have experience creating these. However, histograms and box plots are completely different; those two types of charts are designed to display where "data is clustered" in order to compare the categories (similar to bar charts) (Tableau). I have only used these charts in math class - specifically in AP Statistics. Then there are maps - which are only used for "location-specific questions or geographical exploration" (Tableau). Even though I have had years of experience using these charts in social studies, I have little or no experience in actually creating maps for the purpose of data visualization and analysis. The final type of chart that this

article discusses is the pie chart. Pie charts represent the whole of a dataset into many different portions and are very "powerful" to use; however, they are only "powerful for adding detail to other visualizations" (Tableau). I have created many of these visualizations in the past for schoolwork, but after reading the article I realize that I have never seen a pie chart without another type of graph or chart because its purpose is to help the viewer get an understanding of the data that is presented in the associated table or graph.

The second key aspect that the article details as important to a successful data visualization is to "use predictable patterns for layouts" (Tableau). The Tableau article introduces this key aspect by reiterating an idea that I read in my previous research assessment's article - the idea that people are drawn to visuals and that it is essential to captivate the audience with that purpose in mind. According to the article, the best way to create the "predictable patterns" associated with a visualization is to design the visualization with an "order or format" to ensure the visualization is more appealing and understandable to the audience (Tableau). This is key because if a person doesn't understand the visualization, it's going to be up to the creator to answer questions about the visualization - which is unnecessary if the visualization is done right.

The third key aspect that the Tableau article highlights about a successful visualization is to "tell data stories quickly with clear color cues" (Tableau). This is important because color can indicate a spectrum on a chart or display contrasts/outliers in the data that the visualization represents. According to the article, a visualization must be conservative when it comes to color because you don't want too many (which can be distracting) or too little (which can cause the data to "blend") - so it's best to color-coordinate the visualizations (Tableau). I personally tend to use a single color as the base of a presentation or chart and then I will use the lighter or darker shade of that color to bring a sense of cohesiveness to the visualization.

The fourth key aspect of a successful visualization is to "incorporate contextual clues with shapes and designs" (Tableau). This is important because people don't have the time to fully digest the information presented to them in the same, old-fashioned way - so there needs to be an enticing way to display the information. With the use of context, the audience will have an easier time trying to "decipher information at first glance" all while doing so in an engaging way because of the "intuitive" nature of the chart. I think that this is very true in the modern world, because people have lower attention spans nowadays - so it's in the best interest of the presenter to potentially increase that attention span with context.

Now for the second-to-last key aspect of a successful visualization - the “use size to visualize values” (Tableau). Size can be a very beneficial aspect to any chart when coupled with other key aspects like color. According to the article, size “[emphasizes the] poignant information and adds contextual clues” (Tableau). This allows the visualization to convey its message to the audience in a more image-driven way. I personally think that this is very important for presentations because people are drawn to the largest/larger data points on a size-specified chart (like a map) than they are to a smaller one.

The final key aspect that the article considers essential for a successful visualization is the application of “text carefully and intentionally” (Tableau). The chart is the most important part that people need to see and it’s really important that the text doesn’t overwhelm the data presented in the visualization. The article highlights that text should only be used in the case of pointing “out [the] important details” of a visualization (Tableau). This is the first time I actually know the reason for the many rules on the presentations I used to make for high school club competitions. I personally am guilty of placing way too much information through text in the past - as a result, I have made the effort to reduce the amount of information shown in text and increase the number of visuals in presentations.

As I continue my research into data visualization, I think it’s best for me to talk with my mentor, Mr. Shekhar before I continue my research since the research I conduct in the future will be essential for my Final Product.