

Final Project Report

(due May 24th 11:59p.m)

Part 1 - Story and Narrative

Link to the dataset	<ol style="list-style-type: none">1. https://www.kaggle.com/datasets/unsdsn/world-happiness?resource=download&select=2019.csv2. https://stats.oecd.org/Index.aspx?DataSetCode=QITS
Example item from the dataset	<ol style="list-style-type: none">1. <i>Switzerland, Western Europe, 1, 7.587, 0.03411, 1.39651, 1.34951, 0.94143, 0.66557, 0.41978, 0.29678, 2.51738</i>2. <i>Austria, 7379797, 7240828, 10131195...etc</i>
Story you want to deliver	<ul style="list-style-type: none">- There are certain patterns in countries that are happier than others (ex. More trade, more money)- Countries trade with both happy and less happy countries<ul style="list-style-type: none">- <i>One may have assumed that happy countries primarily trade with happy countries, etc.</i>- As expected, countries trade mostly with the countries near them, but there are certain long distance trade partnerships, especially with wealthier countries<ul style="list-style-type: none">- <i>USA trades a lot with China and European countries</i>- There are certain patterns that are evident on a geographical scale, such as European countries tend to be happier and trade more with other countries as a result- Countries are similarly happy to their neighbors, but their trade patterns tend to actually be quite different in

	some cases
Describe your target audience.	<p>The Target Audience:</p> <ul style="list-style-type: none"> ● <i>Familiarity with your topic?</i> <ul style="list-style-type: none"> ○ My target audience will not be very familiar with the topic, but they may have surface level knowledge. To combat this, we will have general information presented first to give them an overview of the topic. ● <i>Do they care? Why? Why not?</i> <ul style="list-style-type: none"> ○ Similarly, I don't expect the audience to care strongly about the topic of world happiness and trade, but I hope that the visualization will spark interest for them to dive deeper. The reason I don't think they will care is that my topic is quite broad, so it is hard to have a strong opinion on it. ● <i>What do you want them to take away? Key points?</i> <ul style="list-style-type: none"> ○ The key points I want readers/viewers to take away are the fact that the whole world is interconnected either through trade or happiness values, and also that despite differences in culture and language, we find ways to work with each other. ● <i>What do they know about visualization? Are your techniques standard?</i> <ul style="list-style-type: none"> ○ I think my target audience will have experience interacting with different data visualizations, so

they will understand how to dig deeper into the information presented, but I don't expect them to be experts on creating visualizations or the data vis domain. I plan on using standard techniques and signifiers to ensure that the visualization is accessible to all skill levels.

- *How do they encounter your visualization?*
 - I think the audience will encounter my visualization through word-of-mouth as something that may be interesting. I don't expect many viewers to search out something on this topic, which is why I plan on making the visualization applicable to different levels of expertise and familiarity.
- *Mathematical background? Are you assuming too much? Too little?*
 - I am not expecting any level of a mathematical background, as I will try to present the information as simply as possible so understanding the visualization is accessible to everyone.
- *Device? Mobile phone, computer, print media...*
 - My target audience will view the visualization on a computer. One reason for this is that I plan on incorporating interactivity through hovering, which would require a computer.

<p>The goal of your project outcome. And why?</p>	<p>(exploratory vs. explanatory)</p> <p>I hope for my visualization to be a mix of exploratory and explanatory, in that I only plan on giving viewers very high level messages about trends and insights, and allow them to explore the data as they want to dive deeper. In this way, users will have the freedom to focus on the areas that are most interesting for them - and hopefully gain some takeaways about the status of the global economy. In other words, the goal for this project is to have users learn more about the world and gain a new appreciation for its interconnectedness through self-learning.</p>
<p>Narrative structure you plan to use</p>	<p>I plan on using a drill-down narrative structure.</p>
<p>Elaborate your choice of narrative structure.</p>	<p>The reason I chose to implement a drill-down structure is because my hope for the visualization is that viewers are free to explore and learn as they want. I want the visualization to appeal to a variety of viewers of different skill levels and familiarity with the domain, so I want them to be free to explore to whatever depth they are most interested in and regarding whatever countries/regions they are most interested in. In this drill-down structure, viewers will be presented with high-level information at first, and can get more detailed information and different types of information by interacting with the visualization.</p>
<p>Narrative genre you plan to use</p>	<p>The narrative genre I plan to use is an annotated chart.</p>

Elaborate your choice of narrative genre.	<p>The reason I chose to use an annotated chart is because I wanted extra information about data points to be closely positioned and related to the data it mentions. Furthermore, I believed that an annotated chart would fit well with my decision to use a drill-down narrative style -> in that if there are any annotations that readers find interesting, they can use interactivity to dive deeper into that specific area. In addition, I personally feel that an annotated chart does a good job of making the data and its visualization the main focus of the overall presentation, and I felt that I wanted to use that.</p>
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Part 2 - Outline

Story you want to deliver	<ul style="list-style-type: none"> - There are certain patterns in countries that are happier than others (ex. More trade, more money) - Countries trade with both happy and less happy countries <ul style="list-style-type: none"> - <i>One may have assumed that happy countries primarily trade with happy countries, etc.</i> - As expected, countries trade mostly with the countries near them, but there are certain long distance trade partnerships, especially with wealthier countries <ul style="list-style-type: none"> - <i>USA trades a lot with China and European countries</i> - There are certain patterns that are evident on a geographical scale, such as European countries tend to be happier and trade more with other countries as a result - Countries are similarly happy to their neighbors, but their trade patterns tend to actually be quite different in some cases
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<p>Specifications on each plot in the order of how you lay out on your project</p>	<ol style="list-style-type: none"> 1. Plot 1 <ol style="list-style-type: none"> 1) Task: This choropleth describes the overall happiness scores for different countries based on Dataset 1. 2) Attributes: Country Name, Happiness Score 3) Marks: Filled Country Shape 4) Channels: <ul style="list-style-type: none"> - Color for happiness score (on a gradient) 5) How this plot adds to the story: <p>This plot will provide viewers with a general overview of the happiness dataset and allow them to assess overall trends by region and identify outliers in terms of scores. Viewers will better be able to understand the dataset and be prepared to dive deeper into future plots.</p> 2. Plot 2 <ol style="list-style-type: none"> 6) Task: This chart will specify the factors and their weights on a specific countries overall happiness score. 7) Attributes: GDP per Capita, Family, Life Expectancy, Freedom, Generosity, Trust, Government Corruption 8) Marks: Rectangular areas to signify the weight of a given attribute 9) Channels:
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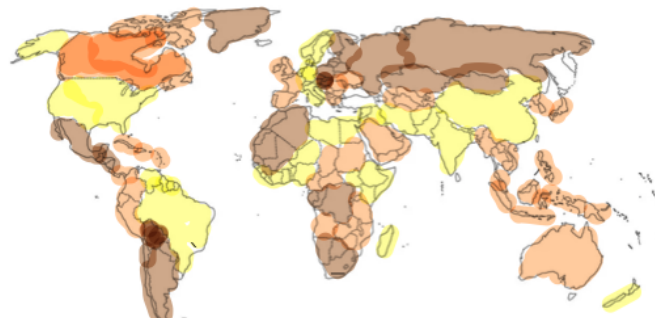
	<ul style="list-style-type: none"> - Height of the rectangle will depend on the value of the attribute's weight -> taller rectangle would correspond to more heavily weighted attribute <p>10) How this plot adds to the story:</p> <p>This plot will provide more specific details on a countries happiness score, by identifying the values of different factors contributions to the overall score. It will allow users to learn more about specific countries, and by using the plots generated for multiple countries, viewers can compare values between countries.</p> <p>3. Plot 3</p> <p>11) Task: This chart will plot the trade between an individual country and other countries across the globe.</p> <p>12) Attributes: Trade with Australia, Trade with Austria, Trade with Belgium, etc.</p> <p>13) Marks: Lines, country areas</p> <p>14) Channels:</p> <ul style="list-style-type: none"> - Location of the line to signify different countries connected by the line - Thickness of the line to signify the total value of trade between the two countries <p>15) How this plot adds to the story:</p>
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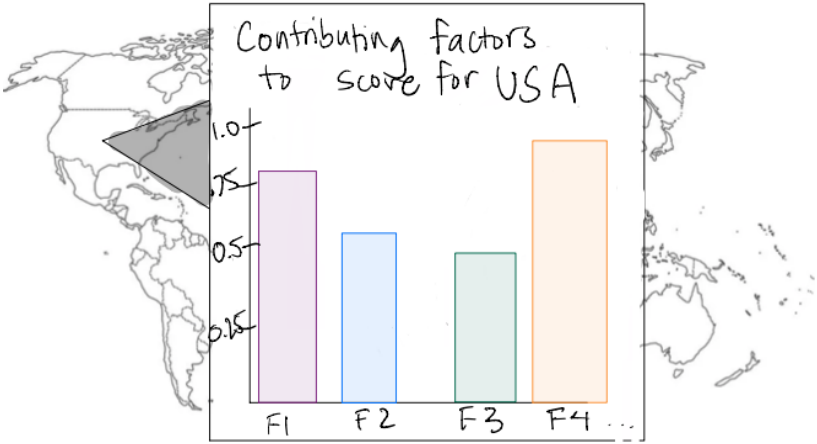
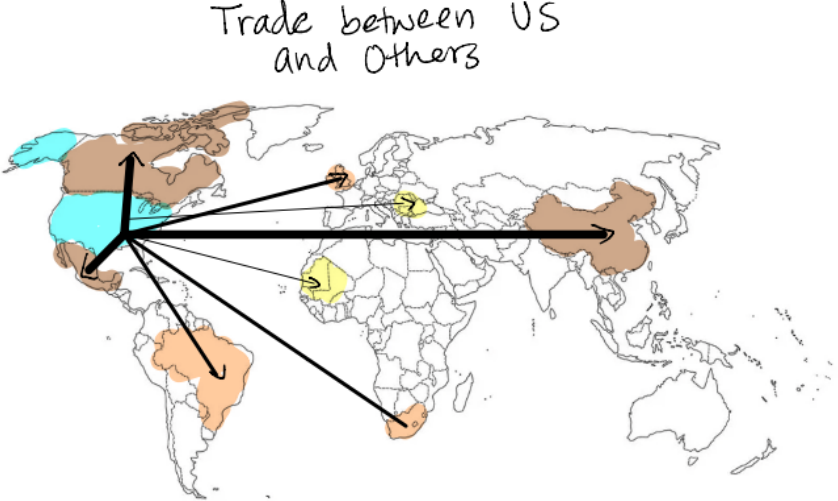
	<p>This plot will allow viewers to understand what countries trade with each other and additionally how much countries trade with each other. For example, viewers can understand how much the US trades with Belgium vs how much the US trades with Mexico, and draw conclusions based on that data.</p>
<p>Elaborate the choice of their marks and channels for each vis</p>	<p>For plot one, I chose to do a choropleth, with marks of country shaped areas, and channels of country location and color corresponding to happiness score. The reason I chose to do this is that I wanted to provide viewers with a high-level overview of the visualization, and the choropleth would allow users to easily spot countries, and by using color as the channel to signify scores, viewers can quickly gauge a general understanding of the overall data as well as the data for a single country.</p> <p>For plot two, I will be creating a bar chart, which means the marks will be areas and the channel will be area height, corresponding to the value of each attribute. This will be an easy way for viewers to understand the weight of each attribute, and by having the bar chart, viewers can also easily compare the heights of different bars to compare different attributes.</p> <p>Finally, for plot 3, I will be doing a network graph, with different line marks serving as the connections between two countries. The channels for this plot are the end points of the line, which signifies the countries involved, and the thickness of the line, which will signify the total value of trade between the countries involved. This network graph and the marks/channels I chose will allow users to geographically</p>

	<p>understand the trade networks in for different countries, and by looking at the connection thickness, they can understand the volume of trade between two countries.</p>
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Part 3 - Prototype

Provide a photo or screenshot of your prototype. A prototype should depict how you place different components of your visualization. You may use pen-paper, or using tools like excalidraw, figma etc.

<p><u>Prototype</u></p> <p>{ Block of text introducing the visualization and the data. Also discussing key insights as described in the story section. }</p> 	<p>As mentioned previously, the initial plot would be a choropleth of the happiness scores for each country.</p> <p>I'm so sorry for the crude drawing and coloring! :)</p>
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 <p>Contributing factors to score for USA</p> <table border="1"><thead><tr><th>Factor</th><th>Value</th></tr></thead><tbody><tr><td>F1</td><td>0.75</td></tr><tr><td>F2</td><td>0.55</td></tr><tr><td>F3</td><td>0.45</td></tr><tr><td>F4</td><td>0.85</td></tr></tbody></table>	Factor	Value	F1	0.75	F2	0.55	F3	0.45	F4	0.85	<p>After clicking on a country, a pop-up will appear with the bar plot detailing the values of each contributing factor to the overall happiness score.</p>
Factor	Value										
F1	0.75										
F2	0.55										
F3	0.45										
F4	0.85										
 <p>Trade between US and Others</p>	<p>Finally, this plot would display the trade relationships between the selected country (USA, highlighted in Blue) and others. It would use arrows or a network style graph to help viewers understand the magnitude of the trade.</p>										