CSCE 5320 Scientific Data Visualization
ICE-9

Using Color and Size in Visualization

Use Python for this lab. Please use your own data for this lab, you can use the data set from your previous labs. The data should contain multiple quantitative values or timeline.

1. **Encoding Data using Color and Size (30 points)**

   1.1) Please show part of your dataset (use python), submit the screenshot of the data, and describe your data including its different attributes/ columns.

   1.2) Encoding the data with x-y channels, add both color and size to your graph, different color and size should represent different attributes of the data. Submit a screenshot of the graph and a screenshot of your code (commented properly).

   1.3) Try to Optimize your graph and explain why and how you optimize it. Provide a screenshot of your optimized graph and the code for optimization.

2. **Stacked & Grouped Bar Chart (20 points)**

   2.1) Create a stacked & Grouped Bar Chart for your data. Submit a screenshot of the graph and a screenshot of your code (commented properly).

   2.2) Analysis the data based on the bar chart.

3. **Stacked Area Chart (20 points)**

   3.1) Create a stacked area chart for your data (or part of your data). Submit a screenshot of the graph and a screenshot of your code (commented properly).

   3.2) Analysis the data based on the area chart. Give an explanation on the trends or changes.

4. **Line Chart with Multiple Lines (30 points)**

   4.1) Create a line chart for your data. Submit a screenshot of the graph and a screenshot of your code (commented properly).

   4.2) Create another line chart which is more comparative (for example: compare lines between major countries, same area, etc.) Submit a screenshot of the graph and a screenshot of your code (commented properly).

   4.3) Analysis the data based on both line charts. Explain the trends or changes.

Rubric ICE 9

Q1: Encoding Data using Color and Size (30 points)

Criteria	Ratings		Pts
1.1) Screenshots of the data is provided, and the data description / explanation is matching the data.	**10 pts**	**0 pts**	5 for the screenshot 5 pts for data explanation
	Full Marks	**No Marks**	
1.2) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**10 pts**	**0 pts**	5 for the graph 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
1.3) Answer the question. Provide screenshots of the optimized graph and the code for optimization.	**10 pts**	**0 pts**	5 pts for answering the question 5 for the screenshots
	Full Marks	**No Marks**	

Q2: Stacked & Grouped Bar Chart (20 points)

Criteria	Ratings		Pts
2.1) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**15 pts**	**0 pts**	10 pts for bar chart 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
2.2) Data analyzing and explanation	**5 pts**	**0 pts**	5 pts
	Full Marks	**No Marks**	

Q3: Stacked Area Chart (20 points)

Criteria	Ratings		Pts
3.1) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**15 pts**	**0 pts**	10 pts for the stacked area chart 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
3.2) Data analyzing and explanation	**5 pts**	**0 pts**	5
	Full Marks	**No Marks**	

Q4: Line Chart with Multiple Lines (30 points)

Criteria	Ratings		Pts
4.1) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**10 pts**	**0 pts**	5 pts for the multiple line chart 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
4.2) Screenshots of Code and the graph are provided, and the code should be properly commented with an explanation.	**10 pts**	**0 pts**	5 pts for the line chart 5 pts for code screenshots and code explanation
	Full Marks	**No Marks**	
4.2) Data analyzing and explanation on both line chart	**10 pts**	**0 pts**	5 pts for each line chart
	Full Marks	**No Marks**	

Plagiarism Rules：

• No scores to the questions which are completely plagiarized i.e., same screenshots captured, or almost same wordings for an explanation.

• If the similarity score for the explanation part (mainly analysis) is >= 50% and is plagiarized with other students or any source, deduct 30-50% off from the obtained score.

• If it is between 30-50%, deduct 20-30% from the obtained score.

• For all others, it should be according to the

ICE Submission Guidelines

1. ICE Submission is individual.
2. ICE code (if there is any) has to be properly commented.
3. The documentation should include the screenshots of your code/results.
4. Provide the explanation of the exercise as per your understanding.
5. The similarity score for your document should be less than 15%.
6. Submit the documentation (.pdf/.doc) with visual images of the data with explanation.
7. Submission after the deadline is considered as late submission.