CS 503 – Data Visualization

Final Exam

The exam is worth 100 points total. Be sure to read the whole exam before attempting any of it. This exam is open book since it is online. ***Please note that this exam is individual and not in group****. The exam is at December 16th, 2022 from 8:30 am to 23:59 pm.*

1. Introduction

In this final exam, you will design four interactive visualizations techniques for a challenging dataset and provide a rigorous rationale for your design choices.

2. Tasks

The dataset contains some important information about diabetes.

Step 1. Pose an initial question that you would like to answer as you did in the final project and in the assignments.

Step 2. Assess the fitness of the data for answering your question.

Inspect the data--it is invariably helpful to first look at the raw values. Does the data seem appropriate for answering your question? If not, you may need to start the process over. If so, does the data need to be reformatted or cleaned prior to analysis? Perform any steps necessary to get the data into shape prior to visual analysis.

Step 3. Design four visualization techniques that you believe effectively communicates the data and provide a short write-up (no more than 4 paragraphs) describing your design. While you must use the data set given, note that you are free to transform the data as you see fit. Your chart image should be interpretable without recourse to your short write-up. Do not forget to include title, axis labels or legends as needed!

As different visualizations can emphasize different aspects of a data set, you should document what aspects of the data you are attempting to communicate effectively. In short, what story (or stories) are you trying to tell? Just as important, also note which aspects of the data might be obscured or down-played due to your visualization design. In your write-

up, you should provide a rigorous rationale for your design decisions. Document the visual encodings you used and why they are appropriate for the data. These decisions include the choice of visualization type, size, color, scale, and other visual elements, as well as the use of sorting or other data transformations.

3. Submission

You must submit the *pdf* file of your report. In fact, it must contain three images that illustrates three visualization techniques and rigorous explanations. Indeed, your explanation must justify which one of the four visualization techniques will help the reader to give a relevant answer to your question. The use of a multidimensional visualization (3D, 4D, etc.) and an interactive visualization will be an asset. **In addition, you have to submit your *.py* or *.ipynb* if you prefer using *Jupyter Notebook and the dataset*. *Please, do not submit your final exam in .zip or .rar files.*** If you used a library in Python, include the command to install in your Notebook.

*All submissions must be performed through Moodle. Any submission with errors will get attributed the grade zero. No submission by email will be accepted. Please note that any late **submission or update** will involve a penalization of 10% for 30 minutes late submission, 20% of one hour, etc. **The penalization will be applied for submissions or updates after 00:15 am.** It will be of your interest to be efficient in managing your time.*