COMP 6934 – Second Project (40%)

Due: 11:59pm, Apr. 5, 2024

Introduction

You will act as a freelance data visualization specialist. Your client is a hospital complex in Ontario.

They need better monitoring of their processes around stroke care in their hospital, and have asked you to prototype an interactive dashboard to help them understand their processes and patients.

They have provided you a data set with patients that have had an ischemic stroke (a blood clot in the brain). This data set encompasses the most important aspects of the patients journey through their hospital system, from the time they arrive in the emergency department to the time they are discharged.

Patients arrive to hospital in the emergency department. They are formally admitted to the hospital once they have been triaged. Typically, they undergo a CT scan to diagnose the stroke, followed by intravenous thrombolysis (TPA) to break up the blood clot. This is time sensitive and critical that they occur as soon as possible. Some patients may spend time in the intensive care unit (ICU). Afterward, they are transferred to the neurology ward, where they are seen by a variety of medical specialists while they recover. The total length of time spent in hospital may range from a couple of days to a few weeks.

Goal

Create an interactive dashboard that allows your client to explore the data. Give your client a 5–10 minute presentation on your final product.

Your dashboard should help them explore and find interesting trends or correlations in the data. For example, you may to wish to highlight meaningful cohorts within patient populations, or connect hospital processes to recommended guidelines and metrics suggested by the Canada Stroke Best Practices.

Deliver your product to your client with a video presentation. Explain how to use the dashboard and highlight any interesting stories within the data.

Constraints

Your dashboard must be created in Python using either ipywidgets inside of a Jupyter notebook environment (run using voila) or through Dash. You are free to create visualizations using Matplotlib, Seaborn, Plotly or any other Python visualization package.

Your dashboard must contain 4 unique visualizations. You must include at least 4 interactive controls (more is permitted).

You are welcome to augment your project with additional sources of data that relate in some way to the original data / client's needs.

You can work on the project in partnership with one other student in COMP 6934.

Evaluation (100 pts)

Your project will be evaluated on the dashboard as a whole, the individual visualizations, the code to create them, and the video presenting your project to your client.

For the coding component (20 pts total), what is important is that data manipulation or pre-processing and the creation of your visualizations are implemented correctly. That is, your code accomplishes what you intend to achieve.

- Correctness for any data pre-processing or manipulation. (8 pts)
- Correctness for creation of visualizations and interactive components. (8 pts)
- Executes without errors or bugs. (4 pts)

Your dashboard and the visualizations it contains will be assessed as follows (55 pts total):

Number (4 pts)	Your dashboard must contain 4 (and only 4) visualizations. There must be at least 4 interactive controls (more are allowed).
Originality (8 pts)	A highly original design or degree of customization applied to your visualization designs and dashboard composition.
Aesthetics (8 pts)	Choices of colours, styles, and sizes of visual elements.
Annotations (8 pts)	Choices around textual elements. Font, size, weight, amount of text, usefulness.
Clarity (12 pts)	Visual clarity vs visual clutter. How accessible are intended or possible interpretations from your visualizations. Decisions on angle, frame and focus.
Appropriateness (8 pts)	Are the interactive elements useful and do they add value for the client? Alignment of each visualization type with its chosen data and intended interpretation.
Responsiveness (7 pts)	All interactive elements should execute within 5–10 seconds.

Your video presentation is your chance to deliver your final product to your client. Do not walk your client through your code in your presentation. Your client is interested is interested in whether the dashboard is useful for them to understand their data, not the underlying code on how it is built.

Your presentation is your opportunity to tell the stories contained within your visualizations to the client. How should your client understand your visualization? How can your client use any interactive elements? What insights about the data can you deliver?

Your video presentation will be assessed as follows (25 pts total):

Length (4 pts)	Your presentation should be between 5–10 minutes. Videos over 10 minutes will receive no marks on this aspect. Videos under 5 minutes will receive half marks.
Explanations (8 pts)	How clear are your explanations of the visualizations and interactive elements? Would your client be left confused or unclear about particular aspects of the dashboard?
Cohesion (8 pts)	Overall cohesiveness of the presentation. There should be a logical structure and flow.
Impact (5 pts)	Impress your client and make your presentation memorable.

Submission

Submit <u>one</u> Jupyter notebook or Python script that contains everything needed to create your dashboard from the original data set.

Your pre-recorded video presentation can be in an uploaded video file or a YouTube link.

Only one member of your group needs to submit your project files, but make sure you clearly state who is your project partner.

Late submissions will be subject to a 10% penalty for each 24 hours past the deadline.

Attribution

Submissions should include an attribution section indicating any sources of material, ideas or contribution of others to the submission.

Submissions must represent your independent work.

You are encouraged to use any resources to help with your solution, but your solution must represent independent work. If your submitted work includes unacknowledged collaboration, code materials, ideas or other elements that are not your original work, it may be considered plagiarism or some other form of cheating under MUN general regulations 6.12.4.2 (4.12.4.2 for graduate students) and academic penalties will be applied accordingly.

Avoid academic penalties by properly attributing any contribution to your submission by others, including internet sources and classmates. This will also help distinguish what elements of the

submission are original. You may not receive full credit if your original elements are insufficient, but you can avoid penalties for plagiarism or copying if you acknowledge your sources.

Github

I encourage you to store and version your work on GitHub. It is good practice to do so as everyone uses git in the real world.

However, **it is a requirement that git repositories containing assignment material be private.** University regulations (undergraduate 6.12.4.2 and graduate 4.12.4.2) consider it cheating if you allow your work to be copied. There will be zero tolerance for this.