DATA 31500 Autumn 2024

Strategic Visualization Game

In class today, we will do a collaborative exercise on strategic uses of visualization. Specifically, students will participate in a game that involves (1) coming up with sets of design goals for visualization and (2) designing visualizations that meet a given set of goals. One round of the game involves coming up with a set of goals, swapping goal sets, and trying to solve goal sets designed by another team. We will play as many rounds as we can within our class time.

This activity will not be graded. However, I ask that students post their visualizations and design goal sets in this `Google Doc`.

Scenario

Imagine a scenario where a buyer and seller are negotiating the potential purchase of a dataset. They will naturally have different incentives. The *buyer* wants to know if the data are useful for their purpose, e.g., if they contain certain patterns/information, can answer specific questions, or can support certain inferences or predictions. The *seller* has contractual obligations not to reveal sensitive information about the data, e.g., whether it contains certain records, measurements, groups, or patterns.

In advance of a purchasing decision, buyer and seller will communicate about the dataset via *visualizations*. This will enable the buyer to assess whether they want to purchase and will enable the seller to try to persuade the buyer. Because *data are nonrival* (i.e., access cannot be revoked once granted), the seller may choose not to disclose certain information about the dataset through visualization. Similarly, the seller may wish to limit disclosure of data, emphasize/highlight, downplay, or obfuscate patterns in order to persuade the buyer, although some of these behaviors would be deceptive.

The objectives of our game are to come up with sets of goals that the buyer and seller might have for a particular dataset, and then design a visualization that jointly satisfies those goals. Some goal sets will be *completementary*, in the sense that what the buyer wants is compatible with what the seller can reveal. Other goal sets will be *adversarial*, in the sense that what the buyer wants to know is incompatible with what the seller can reveal.

Instructions

Students will *split into teams of 2-3.*

Each round of the game will proceed in two stages.

Stage 1: Ideate design goal sets.

1. Choose a dataset from Kaggle or a similar online data archive. Don't overthink it; just pick one fast.

2. Come up with a complementary set of design goals, representing compatible needs of a hypothetical buyer and seller. Try not to make the goals completely unrelated to each other.

3. Come up with an adversarial set of design goals, representing incompatible needs of a hypothetical buyer and seller. Try not to make the goals impossible to solve.

4. Post a link to download the data and both goal sets in the provided Google Doc.

Stage 2: Author visualizations.

1. In the Google Doc, highlight another group's goal sets that you would like to work on. We will proceed once every group has chosen or been assigned.

2. Download the provided dataset, and load it using a scripting language of your choice.

3. Design a visualization that jointly satisfies the complementary goal set.

4. Design a visualization that jointly satisfies the adversarial goal set.

5. Post your visualizations in the provided Google Doc next to their corresponding goal sets.

Aim to work quickly, so we can play a few rounds. Do not spend much time looking for datasets or wrangling data. The purpose of the game is to think about strategic uses of visualization and the kinds of communication problems that can arise when authoring visualizations in a collaborative setting.