Final Project Report

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

You can start working on the project once your report is accepted and graded by your TA. The entire final project is worth **35%** of your final grade and this report accounts for **10%**. This project is done individually.

Submission Guideline

Download this google doc, fill the table. **Type** your answers, no handwritten answers will be accepted (except for the very last question). Submit it in **PDF** format on Gradescope.

If you need some inspirations please feel free to take a look at:
Showcase of Information is Beautiful Awards
Bloomberg Year In Graphics Review
The Pudding
The New York Times

Project Guidelines

Note: The guideline has been further clarified from Progress Report 1, so double-check whether your dataset choice still satisfies the updated guideline below.

1. You may use more than one dataset, however, regardless if you use one or multiple datasets, your visualizations must make use of at least three following data types - **link, position, and attribute.**
2. You cannot use any dataset from the class (Labs, Assignments, Lecture Exercises)
3. You can make your own dataset (Web scrape etc.) provided point 1. is satisfied.

Part 1 - Story and Narrative

Link to the dataset	1. The Violence Project: https://www.theviolenceproject.org/mass-shooter-database/
	2. Gun Violence Archive: https://www.gunviolencearchive.org/reports
	   a. Data taken from reports on Mass Shootings from 2013 - 2023 and combined into one dataset
	3. Wisevoter: https://wisevoter.com/state-rankings/states-with-strictest-gun-laws/
	   a. Web scraped
	4. World Population Review: https://worldpopulationreview.com/states
	   a. Dataset used to calculate mass shootings per capita

Example item from the dataset	1. Baumhammers, Richard, Friday, 28, 4, 2000, Pittsburgh, PA, [Place of Residence], 5, 1, 34.0, [Male], [White], No, [Heterosexual], [Unknown], [Graduate school/advanced degree], [No evidence], [Simple Assault], 79 2. 496703, December 31, 2023, Ohio, Barberton, 300 block of Seventh Street Northeast, 1, 3, 0, 0, 1, NaN, 2013 3. Colorado, B, 15.4 per 100k, Democrat 4. 6, California, 249.81347, 38915693, 39029342, 39501653, 39276883.3, 37253956, -0.00291, -113649, 0.04461, 155779, 1, 0.11656
Story you want to deliver	Facts/Insights: With the surge in mass shootings across the nation, this is a highly discussed topic on the political platform and a cause for concern among teens and parents, according to surveys done by Pew Research Center. The Gun Violence Archive database shows that as of May 8, 2023, there have been more mass shootings than there are days in the year. Messages: With my visualization, I aim to convey the importance of discussing the mass shooting epidemic. I also aim to encourage analyzing factors and attributes that may motivate mass shootings in more detail, away from common assumptions and misconceptions. By addressing attributes that may be commonly associated with mass shootings, taken from different political sides, I hope to promote the significance of looking at

	statistics and emphasize the complexity when discussing gun legislation.
Describe your target audience.	The target audience is for anyone with an interest or care in gun violence or shootings, whether that be those who want stricter gun laws or not or just pure curiosity. They don't need strong familiarity with the topic, as brief annotations and the graphs themselves will allow them to catch up. I intend for them to get a little more insight on the current state of mass shootings today in relation to the past and get nuanced perspectives with broken-down statistics. The target audience does not need to have extensive knowledge of visualization, but rather just knowledge of basic graphs and how to interpret them. The visualization can be encountered through a website or link that can be accessed digitally on a mobile phone or computer.
The goal of your project outcome. And why?	The goal of my project will be more exploratory than explanatory. With aggregated results, the visualization could be explanatory in conveying an overall message, but by breaking the data down into gender, location, time, race, mental illness, among others, the user themselves can explore more nuanced and specific features they're interested in to come up with their own analysis. There are so many features to look at when it comes to mass shootings that it's best for it to be exploratory.
Narrative structure you plan to use	Drill-Down Story
Elaborate your choice of narrative structure.	I chose this narrative structure because my target audience is those that may or may not be familiar with the topic. To introduce them to the topic, I first need to present a high-level view of the data, which would be the mass shooting epidemic and how significant it is. Then, as mentioned before, the visualizations would be exploratory so that the users can explore different features such as race, gender, and other background information after learning from a higher level. Thus, with my purpose in mind, drill-down would be the most ideal.

Narrative genre you plan to use	Annotated Chart
Elaborate your choice of narrative genre.	I chose an annotated chart to better explain my topic to an audience of those that may potentially not be familiar with the topic. It also helps that with so many features, annotating using tooltips would allow for summarization of the visualizations so that the user is not overwhelmed with all the information, since my data is exploratory.

Part 2 - Outline

Story you want to deliver	Facts/Insights: With the surge in mass shootings across the nation, this is a highly discussed topic on the political platform and a cause for concern among teens and parents, according to surveys done by Pew Research Center. The Gun Violence Archive database shows that as of May 8, 2023, there have been more mass shootings than there are days in the year. Messages: With my visualization, I aim to convey the importance of discussing the mass shooting epidemic. I also aim to encourage analyzing factors and attributes that may motivate mass shootings in more detail, away from common assumptions and misconceptions. By addressing attributes that may be commonly associated with mass shootings, taken from different political sides, I hope to promote the significance of looking at statistics and emphasize the complexity when discussing gun legislation.
Specifications on each plot **in the order of how you lay out on your project**	1. Plot 1 1) Task: This bar chart analyzes trends between Year/Month and Number of Mass Shootings/Killed/Injured, as well as trends between then number killed/injured and the number of mass shootings. It also provides annotations to see how many people were killed/injured in a specific year/month.

	2) Attributes: Year, Month, Number of Mass Shootings, Number of People Killed, Number of People Injured 3) Marks: point marks 4) Channels: - aligned vertical position channel for Number of People Killed and Injured and Number of Mass Shootings - aligned horizontal channel for Year and Month - Color to distinguish between Number of People Killed and Injured - Shape to distinguish the Number of Mass Shootings (line) to Number of People Killed/Injured (rectangle) 5) How this plot adds to the story: My visualizations aim to show how the number of mass shootings in the US developed over the course of the year, as well as the number of casualties. This plot will provide more specific insights on the temporal relationships between variables, as well as any patterns between casualties and number of mass shootings. Showing this plot first emphasizes how important and relevant the topic of mass shootings is, with the increase in mass shootings, and thus engages the audience to further explore the other plots. 1. Plot 2 6) Task: This choropleth analyzes the number of mass shootings, total and per capita, in relation to each state and provides annotations on individual state statistics, such as Gun Grade Law and Political Party. It also analyzes whether there is an association between the number of mass shootings and another state attribute. 7) Attributes: State, Number of Mass Shootings, Number of Mass Shootings Per Capita, Gun Grade Law, Political Party

	8) Marks: point mark 9) Channels: - Color is used in a hue along w a legend to show the number of mass shootings, total and per capita 10) How this plot adds to the story: My visualizations aim to see whether location has any correlation to the number of mass shootings and by using a hue, allows for comparison between states. It also uses highlighting by Gun Law Grade and Political Party to see if politics and legislation have any correlation to the number of mass shootings. Putting this second aligns with my drill-down story by providing further insight and information into mass shooting geographically and politically. 1. Plot 3 11)Task: This network graph shows all the connections between shooters with similar backgrounds and attributes, as well as the distribution in these attributes to identify any common attributes and outliers. 12) Attributes: Perpetrator Last and First Name, Date of Shooting, City, State, Location, Number Killed, Number Injured, Age, Gender, Race, Sexual Orientation, Religion, Criminal Record, Mental Illness, Substance Use 13) Marks: a) Nodes for Shooters b) Links for indication of selected shared attribute among shooters 14) Channels: - Color with a legend to distinguish different values of a selected attribute 15) How this plot adds to the story:

	My visualizations aim to explore the backgrounds of the people involved to get a better sense of common attributes and patterns among mass shooters. Seeing the demographic and the relations better helps us understand any lying factors that motivate mass shootings. Putting this after the choropleth allows us to explore from aggregated counts to each individual mass shooting and their attributes.
Elaborate the choice of their marks and channels for each vis	The choices I made in Plot 1 allow for seamless comparison between years. The points as marks allow for individual analysis for each year while the position allows users to compare the number of mass shootings between years and months, as well as the number of casualties between years and months. Putting them adjacent to each other and scaled properly allows for users to see trends over time. Using color allows users to easily distinguish attributes for better comparison while using shapes (lines and rectangles) lets users know to compare the two separately to time or to each other. The choices I made in Plot 2 allows the users to clearly and geometrically map mass shootings. The points, which are represented by states and their individual statistics, allow for users to explore the state of their choice while the color allows for comparison among the states. This provides more individual and among state analysis simultaneously. The darker the state is colored, the more shootings that occurred. The choices I made in Plot 3 enable clear connections between shooters. The nodes allow exploration of individual shooters and shootings while simultaneously allowing the comparison between shooters. The colors help to clearly distinguish differences in attributes among shooters while also showing the overall attribute distribution. The edges that indicate relations provide a clearer representation of how connected and similar shooters may be or may not be.

Following sample answer about a single plot shows how detailed your answers to part 2 should be.

1. Plot 1
   16) Task: This chart a) analyzes trend between Height and Weight of patients with heart diseases and b) locates outliers within the patients

17) Attributes: Height, Weight
18) Marks: point mark
19) Channels:
    - aligned vertical position channel for Height
    - aligned horizontal channel for Weight
20) How this plot adds to the story:
    My visualizations aim to deliver health characteristics of patients with heart disease. This plot will provide more specific insights on Height and Weight.

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.

A basic, barebones sample prototype for this project