##### **Liam M, Mika M, Elizabeth B, Srijith G**

##### **Group 10**

**Link to website:** [**https://lizziebeckett.github.io/group10final/**](https://lizziebeckett.github.io/group10final/)

**Bar Chart 1: Location by Number of Crimes Paragraph**

This bar chart highlights the top 10 locations where crimes arise, as identified by their coordinates. Although the visualization successfully ranks the locations with the highest crime rates, it poses an issue for user accessibility due to the fact that coordinates by themselves are not always helpful without additional context, such as neighboring communities or landmarks. Despite this drawback, the graphic offers insightful information by identifying regions with increased criminal activity, including both major and non-serious offenses. This information may be used as a jumping off point for additional study, assisting researchers or law enforcement in concentrating on particular areas to address resource allocation and crime prevention.

**Bar Chart 2: Top 10 streets with the most serious crimes**

This bar chart shows which exact streets have the most crimes in Boston, filtered by the crime being "Serious" in nature. This means that the crime involved some sort of intense violence such as assault, manslaughter, vandalism, drugs, arson, etc. (we will go more in depth about the classification in the presentation). Using the Street names, although doesn't show the exact location, gives the user a better idea of certain areas that have more crime. From this visualization, we are able to see that Washington Street, located in Roxbury, has had the most significant amount of serious crimes in the Boston area.

**HTML All Crime Map Paragraph (HTML in the repo)**

The interactive Folium map on the left-hand side shows all the serious and non-serious crimes in the Boston area. By precisely identifying crime scenes, viewers may quickly see where events are most common around the city. The interactive nature of the map improves its usability by enabling users to zoom out for a more comprehensive picture or zoom in for in-depth views of certain areas. Being able to move around the map also gives users freedom while examining different locations, which makes it an effective tool for locating crime hotspots. Stakeholders like law enforcement and municipal planners may also better understand spatial crime trends and develop effective intervention strategies with the help of this graphic.

**HTML Serious Crime Map Paragraph (HTML in the repo)**

The right-side interactive Folium map filtered for serious crimes in Boston offers a focused view of the locations where the most critical incidents occur. By displaying only severe offenses, the map provides a clearer understanding of high-priority areas requiring attention. Since users can navigate the city or zoom in and out, it's simple to pinpoint particular neighborhoods or areas with a high concentration of significant crimes. Law enforcement organizations and policy analysts, may better prioritize resources and measures to properly handle these high-impact situations with the help of this tailored visualization. Additionally, it helps students who may not be from/familiar with the Boston area choose a safe neighborhood to live in when deciding on off-campus housing.

**HTML Shooting Map Paragraph (HTML in the repo)**

This Folium map provides a focused visualization of shooting incidents, offering an in-depth look at where these violent events are occurring within Boston. The map makes it easier for users to find places with higher risks of firearm violence by highlighting the exact locations of gun-related crimes by filtering only for shootings. Through the interactive capabilities, viewers may zoom out to see more general trends throughout the city or zoom in for a close-up look at certain areas. Law enforcement, legislators, and community organizations may better allocate resources, create focused safety efforts, and address the underlying causes of gun violence in high-impact regions with the help of this map. By offering easily comprehensible data on the frequency and distribution of shootings, it also increases public awareness.

**Gun Metrics Over Time .html**

This line plot visualizes weekly gun-related incidents over time, using marks and channels to effectively communicate trends and patterns. The line marks connect weekly data points to show overall trends, while point marks highlight individual weekly counts. The X-axis position encodes time, displaying weeks across 2023 and 2024, and the Y-axis position represents the number of incidents, facilitating comparisons. The red line emphasizes the seriousness of the data, while the range slider allows users to explore specific timeframes interactively. Key tasks include analyzing trends, such as the dip in incidents from January to May 2024, comparing weekly fluctuations, and identifying recurring patterns, like lower incident counts at the end of each month. For students, this plot provides valuable insights into changes in safety, helping to inform awareness efforts and policy decisions.

**Hourly.html**

The mark in this graph is a line with point markers. The channels are the X-Channel which encodes the hours as an ordinal variable (MONTH:O) to represent time across the day, the Y-Channel which encodes the count or percentage of incidents as a quantitative variable (Count:Q or Percentage:Q), the Color Channel which differentiates between categories of crime (e.g., Violent Crime, Theft, Car Incident) using distinct colors and the Tooltip which provides precise values for the month, category, and count/percentage when hovered over. The task of this graph was to see if there was an obvious trend of crimes in specific hours, and if certain crimes were more prevalent at different times of day.

**Day of the week html**

The mark in this graph is a line with point markers. The channels are the X-Channel, which encodes days of the week as an ordinal variable (DAY\_OF\_WEEK:O), sorted from Monday to Sunday, the Y-Channel which encodes the count or percentage of incidents as a quantitative variable (Count:Q or Percentage:Q), the Color Channel which differentiates between crime categories with distinct colors, and the Tooltip which displays specific counts or percentages for each day and crime category on hover. The task of this graph was to see if there was an obvious trend of crimes on specific days of the week, and if certain categories of crimes had their own trends**.**

**Crime\_dashboard.html**

The marks used in the crime dashboard were boxes for the heatmaps, rectangular bars for the crimes by month, and lines and points for the line plot of crimes by hour. The channels used were a horizontal and vertical position channel for the bar graph and line graph, a color channel on all 3 visualizations, and the length of the bar graph. The task of this graph was to give the user the power to get detailed information on any of the 3 most important types of crimes for a student to be aware of, and what times of day/week/year they happen.

**Monthly.html**

This graph uses rectangular bars as a mark to show how crime incidents change across months. The x-axis represents the months (MONTH:O), and the y-axis shows the number or percentage of incidents (Count:Q or Percentage:Q). The purpose of this graph is to see if there are any patterns with the months of the year and crime rates, to see if crime was more common in certain months than other months.

**Day\_hour\_dashboard.html**

The marks used in the crime dashboard were boxes for the heatmaps, rectangular bars for the number of crimes on a specific hour of a specific day of the week. The channels used were a horizontal and vertical position channel on the bar graph, a color hue for the heatmap, a color channel for the different types of crime for the bar graph, the length of the bar graph, and the tooltip on the heatmap that allows the user to select a point to examine on the bar graph. The purpose of this graph was to allow the user to pick any time of day any day of the week and they would know what type of crime often occurs at that hour and they would know what they need to be aware of.