



Crime Data Visualization Report

Course	CSE332
Student	Zhanarbek Osmonaliev

Introduction

When we talk about crime data visualization, it is important to first access the domain of this topic and decide what we should focus on when visualizing the data. Let's start with defining the topic of this visualization - crime.

Crime is an illegal activity that may be prosecuted by the state and is punishable by law. So, crime is inherently a bad thing, which means that any efforts to visualize crime data must have a goal of reducing the crime rate or at least gaining key insights which could be helpful in crime prevention.

In my visualization project, I want to focus on insights in two areas.

1. Social characteristics of suspects and victims

Since most crimes involve two parties, that is, a suspect and a victim, I want to visualize the inter-social relationships between suspects and victims. I will discover crime tendencies that exist between people.

For example: whether people commit crimes against people of younger age or not, whether men commit crimes mostly against women or not.

2. Location of crimes

Crimes are mainly motivated by deteriorating financial conditions. Poverty leads to the rise of other social, physical or mental imbalances in life of people, which makes them more susceptible to commit a crime. With the use of geolocation attributes of the dataset, I want to discover how socio-economic conditions in precincts are related to crime rate.

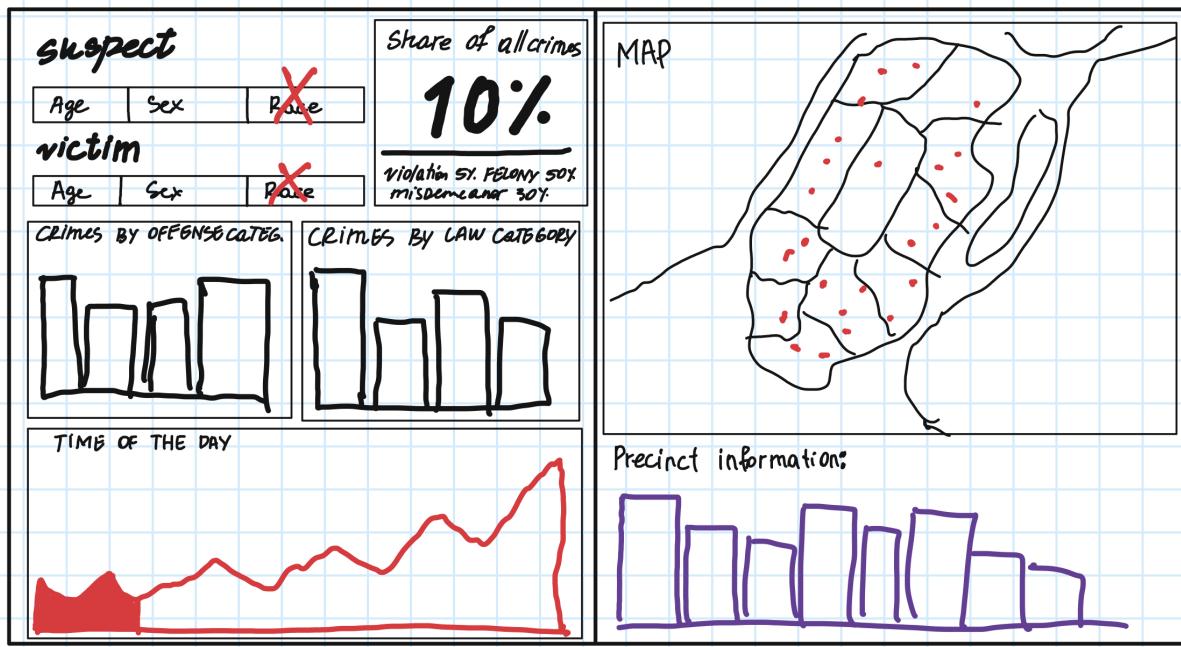
Visualization

It is important to consider that the dashboard must implement some sort of brushing and linking. To address this and my goals together, multiple filter buttons will be implemented in the user interface. These filter buttons will filter visualization outputs based on suspects' and victims' characteristics, such as age, sex or race.

Additionally, to address the goal of finding insights based on precincts, a map of crimes locations will be embedded into the dashboard. Hopefully, I will make a choropleth map that will show crime rates in each precinct. Otherwise, the map will just feature crime locations with an additional tab underneath that will show crime distribution among precincts.

Early Design Draft

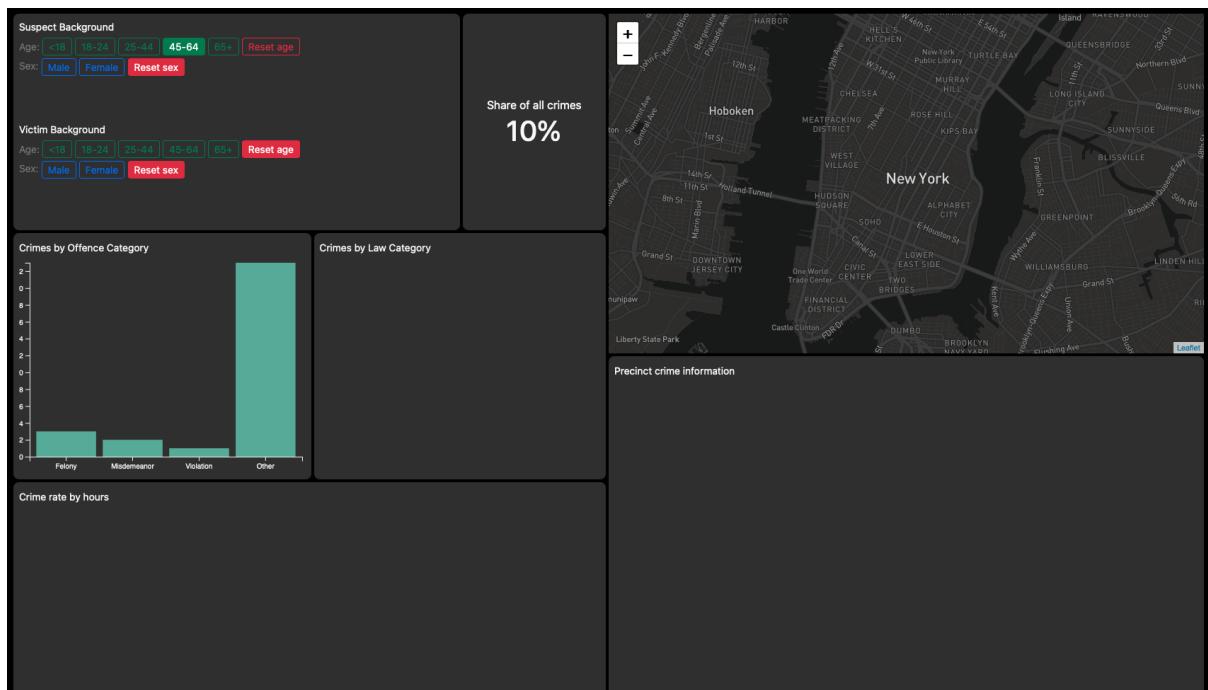
The draft was drawn considering my two primary goals and selecting appropriate visualizations. It was drawn by hand on a tablet.



Low-fidelity design draft of my dashboard

First Iteration

The dashboard's first implementation was made using D3 v6 and Bootstrap v5. The layout was carefully designed and put together for better user experience.



Progress

So far, these features have been implemented:

- Responsive layout
- Mapbox embedded map using Leaflet.JS
- Data brushing & filtering (age buttons)
- Data linking between filter buttons and bar charts
- Transition animations between updates

Get Started with the Demo

1. Start the server
2. Click the `age` buttons under suspect and victim fields
3. The bar chart will adapt based on the filter



The barchart does not represent the actual crime data. Since my dataset has over 11K rows, it was decided to use a lightweight dummy dataset just for the sake of the demo. Be assured, the linking underneath the charts work correctly.