

## **Making sense of Police Field Interrogation and Observation (FIO) Data**

### **Deliverable 1**

**I. Key Question:** What can an analysis of FIOs tell us about police practice, race equity, and targeted policing in MA?

### **II. Limitations of Data and Potential Risks of Achieving Project Goal**

In our initial analysis, we explored Field Investigation Observation (FIOs) data for Boston. Our goal was to observe relationships between different locations and police interactions. Some limitations of the dataset were that there were lots of null values within the columns. In particular, stop\_duration, key\_situations, and weather had over 60% null values. Furthermore, in order to meet the client's vision of comparing FIOs across different municipalities and different races, we had to obtain zip coordinate data and in the near future, we'll have to extract race data from the Census. Lastly, looking ahead to our next steps, we will have to perform extensive data manipulation to compensate for missing values and skewed distributions for modeling.

### **III. Identifying Temporal and Spatial Trends**

#### **A. Trends over time**

The number of FIOs per month can be visualized in a line plot. For this particular dataset, we displayed the number of FIOs for the year 2021. We can also display the number of FIOs for each circumstance (Stopped, Encountered and Observed). We can go further than that, displaying FIOs per week or even day. This analysis approach can help identify trends in the number of FIOs on a monthly, weekly or daily basis. We can observe spikes in said trends and consider reasons behind them. Here, next steps will be combining data from other years to be able to identify trends on a yearly basis.

#### **B. Distribution of FIOs throughout Different Municipalities**

Based on some initial exploratory data analysis it was clear that some areas in Boston observed more FIOs, the top three cities being Boston (downtown), Dorchester, and Roxbury. Thus, it was unsurprising to observe the same trend within zip codes where particular zip codes saw a disproportionate amount of FIOs. When we plotted a map that was partitioned into different zip codes and colored based on the number of FIOs observed in each zip code, we saw that most FIOs were recorded in the heart of Boston and decreased in suburban areas. This trend was to be expected since metropolitan cities usually experience heavier policing compared to the suburbs. Because of the interesting trends between locations, we furthered our analyses in this direction.

### **C. Location insight**

We plotted every FIO in Boston for the year 2021 on a map of Boston based on what street it occurred in. We also color-coded based on the circumstance, similar to the 3 line plot approach in the previous section. This approach can help recognize FIO hotspots in Boston (regions where a lot of FIOs have occurred). We can superimpose that with race/ethnicity representations and with police officers to street assignments. Doing that gives us the ability to calculate 2-way and 3-way relationships between number of FIOs, race/ethnicity distribution and police officer assignment per location. That could give us insight into disproportionalities of FIOs across ethnicity/race and location. For example: one specific region has an abnormally high amount of FIOs that resulted in stops for some ethnicity X.

### **D. . Race Population Distributions Across Boston**

In our previous analysis, we noticed that downtown Boston, Dorchester, Roxbury Jamaica Plain, and Brighton had the top 5 counts of FIOs. Based on this distribution of race populations across Boston there doesn't seem to be a correspondence between race and FIOs but we will further our analysis of this in the near future.

## **IV. Modifications to Original Proposal**

Thus far, there are no modifications to the original proposal. When we met with the client, he corroborated that the focus of the project is to draw conclusions about policing in specific municipalities, observe patterns between municipalities such as race and age demographics on who are stopped, and potentially link individuals in FIOs to gang members. Therefore, the scope of the project is insight into targeted policing and race/ethnicity equity.