

## Police Data Challenge

Large datasets are becoming an essential part of operations across all industries. The data generated by law enforcement can be analyzed with statistical tools to improve policing and neighborhood safety. For this challenge, we chose to analyze the existing data from the Seattle Police Department and develop recommendations to improve public safety.

After examining various datasets on the Seattle.gov website, we decided to utilize the “911 Incident Report” data, which contained approximately 1.5 millions rows of data (2009-2017), comprising well-categorized data, incomplete reports, and duplicate reports. We utilized R (open source software) to remove duplicates and entries with missing data, and then select the relevant data: entries from 2015-2017 only, and removing 10 columns that did not factor into our analysis. We determined the most common crimes during this period were Car Prowl, Shoplifting, and Burglary, and we decided to further investigate these individually.

Seattle is mapped into 17 policing districts. Via analyzing the frequency of a certain crime in each district, we can find concentrated areas of specific criminal activity. Burglary is most frequent in district U and B, which are residential areas. Shoplifting is concentrated near Downtown Seattle, commercial M district. However, the results show that car prowling is extremely high in almost seven districts. From 2015 to 2017, criminal activity spikes every few months. We noticed that each crime shows a jump every July, with the exception of homicides. By breaking down specific times of day, our group found we could better visualize the distribution of crimes by the time they take place. Burglary, as expected, mostly occurs at about mid-afternoon and in late evening to early morning. Shoplifting sees a sharp increase as late morning arrives, peaking at about 3:00 p.m.. Car prowling is the most interesting of the three crimes analyzed, as its most popular times are time periods which many would expect to have the largest amount of witnesses to any illicit endeavors. From 7:00 a.m. to late evening is not really the perfect time for such a crime, although, the action of car prowling hinges upon the quick disassembly of a parked car’s parts, and as such, should be done in daylight to reduce time spent in action.

Based on the analysis of the data provided, our group has come up with several recommendations. The M District is one of the most popular locations for shoplifting and should

be better patrolled by officers. Specifically the area with heavy occurrences of shoplifting is the infamous Pike Market, a public market overlooking the Elliot Bay waterfront in Seattle. Public Markets, like these, could be extremely crowded, especially during busy hours, providing very limited room for cars. Thus, our group proposes police to increase usage of bikes or motorcycles as a means of patrolling that area. Furthermore, our group recommends the Seattle Police Department work with business owners to better prevent shoplifting through monitoring and surveillance.