

“Smash-and-Grabs” or “Bipping” are colloquial terms to describe the epidemic of car break-ins in the United States. According to the San Francisco Police Department, there have been already 2,137 car break-ins in the city this year. That averages to around 14 break-ins per day. The motive for the crime is to steal valuables stored in the vehicles. Additionally, smash-and-grabs commonly occur near tourist hot-spots many unknowing visitors frequent along with their luggage and belongings.

I chose this topic, because my friends and I were victims of a smash-and-grab while visiting San Francisco in 2015. While I am a Bay Area native, this experience soured my perception of San Francisco. As the years went on, smash-and-grabs flooded local news and I have witnessed the city losing its charm to rising crime. The repercussions of these smash-and-grabs is not only the loss of personal valuables, but it also leads to reputation damage for the city, economic consequences of business owners and an overall loss of community and security. Most importantly, performing analysis on the epidemic of smash-and-grabs can assist San Francisco authorities and leaders in protecting vulnerable groups, restoring city reputation and potentially deterring any further proliferation of these crimes.

Lastly, in wrapping the analysis in one shiny app, the public can use this as one centralized source of information to avoid being victims of this crime as well as easily seeing which areas to pay extra attention to. Additionally, in creating this app I have found short-cuts to deploying models used in my thesis.

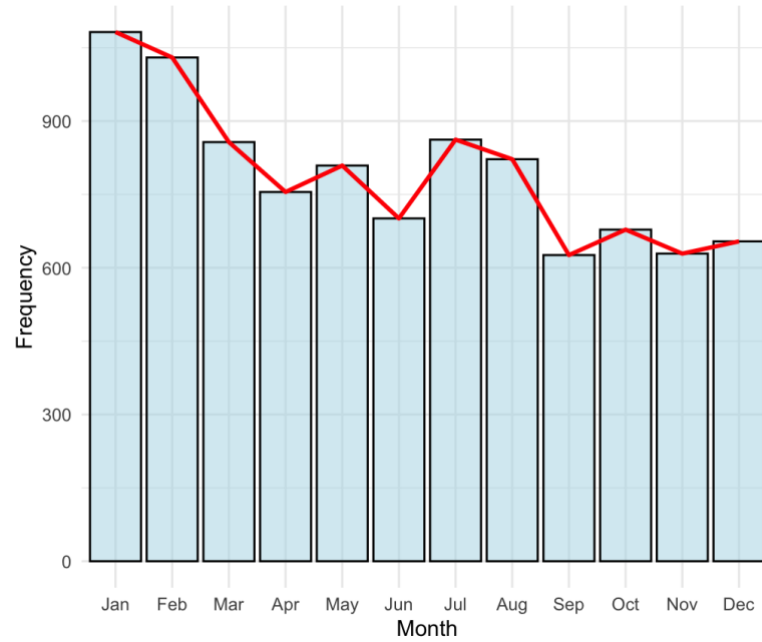
The dataset is sourced from DataSF, San Francisco’s Open Data Portal. Police Department Incident Reports: 2018 to Present is a collection of both officer and self-reported crimes in the city. On account of the most smash-and-grabs occurring during the summer months, the final data was a subset of all, “Larceny - From Vehicle” reports in 2024.

Exploratory Data Analysis

EDA showed high clustering in Northeast San Francisco, a region with a large number of tourist sites such as Fisherman’s Wharf, Ghirardelli Square, Chinatown, Japantown and the Painted Ladies. Tourist sites are of primary interest due to the potential clustering of crimes that might occur around them. In total, the dataset contained 8,476 observations. Lastly, previous years have shown an increase in the summer vacation months, but since the introduction of Prop E in 2024, there as been a decreasing trend of crimes occurring.



Histogram of 2024 Smash-and-Grab Incidents by Month



Neighborhoods	# of Reports
Financial District/South Beach	587
North Beach	581
Mission	565
Western Addition	436
Hayes Valley	390
Intersections	# of Reports
BAY ST \ THE EMBARCADERO	69
AMADOR ST \ ILLINOIS ST	67
LEAVENWORTH ST \ LOMBARD ST	62
JACKSON ST \ KEARNY ST	59
BAY ST \ MASON ST	46

Caveat:

According to DataSF, the data does not include any “identifiable information of any person(suspect, victim, reporting party, officer, witness, etc)”. Furthermore, the locations of incidents are anonymized to only reflect the nearest intersection of the crime. A table of the data is provided at the end of this report.

Methodology:

Two models were created, however only 1 was successfully deployed through Docker and Google Cloud Run and the output was provided in the shinyapp.io link. This was the simple multiple linear regression where users can input a day of the week and month and model will output a neighborhood it believes the crime occurred.

The second was a Poisson point process model of varying polynomial degrees, however this was only executed locally. The code can be found in the plumber.R file.