

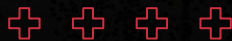
Crime in Los Angeles

In 2015



Lead found in the car

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Our Data Sources

Crime in Los Angeles Data

A large data set of police reports from years 2010-2017, containing over 1 million points

<https://www.kaggle.com/datasets/cityofLA/crime-in-los-angeles>

Open Meteo API

Historical Weather Data based on latitude & longitude

<https://open-meteo.com/>





Data Assumptions

- This is NOT a sample of crimes from these years, it is a comprehensive population
- Because of the immense size of the data, we are only focusing on one year (2015), and from that year, only a few select crimes:
 - Homicide
 - Arson
 - Kidnapping
 - Pickpocketing
 - Throwing objects at a moving vehicle
- Results only generalizable to these crimes for 2015





Data Cleaning Process

Steps for data cleaning:

- Remove unnecessary data columns
- Remove missing values
- Split latitude and longitude string
- Convert date string to datetime format
- Subset to 2015 data only
- Further subset to our specific crimes only



Our Questions

Area vs. Crime

Is there an association between the region of LA city and the type of crime committed?

Victims of Crime

Does sex, age or ethnicity make a person more susceptible to being a victim of a crime? What demographics are most at risk for the specific crimes of focus?

Time vs. Crime

What time of day are crimes more common?

Season vs. Crime

Does the time of year have any effect on the types of crimes committed?

Weather vs. Crime

Does the temperature have any effect on the types of crimes committed?

Heat vs. Crime

Do more crimes happen when the weather is hot?

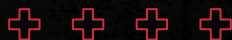




Lead put in the map

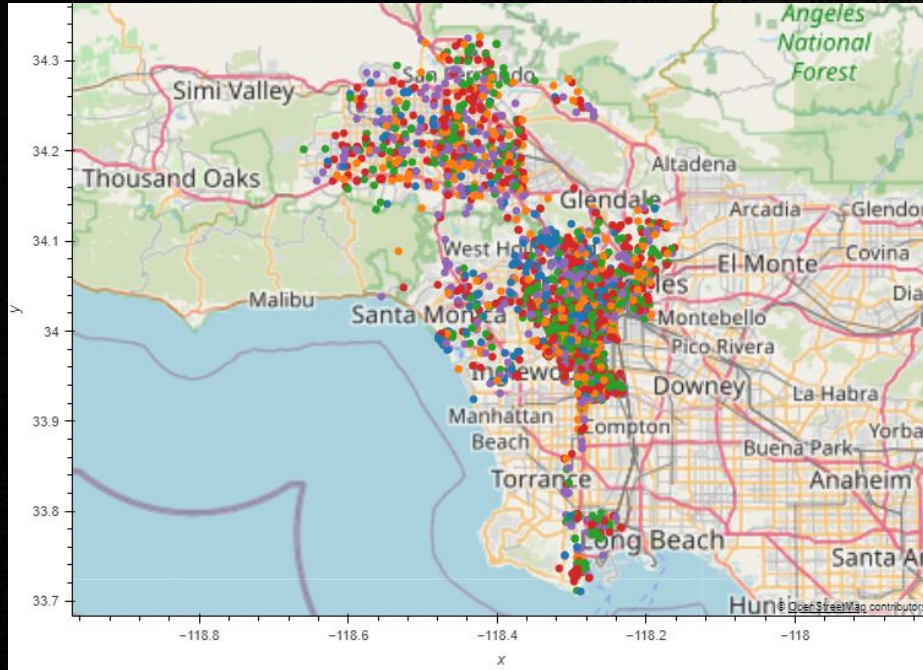
Area vs. Crime

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General Overview

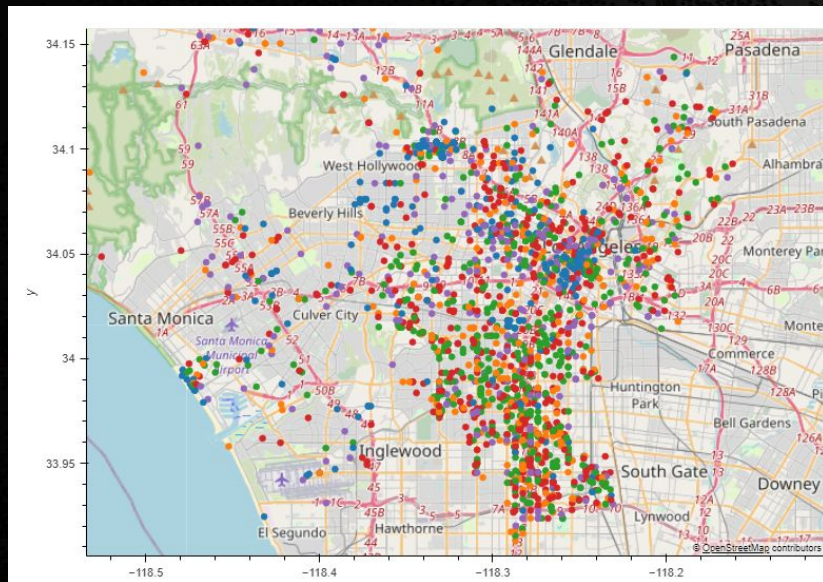


- PICKPOCKET
- KIDNAPPING
- CRIMINAL HOMICIDE
- ARSON
- THROWING OBJECT AT MOVING VEHICLE

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Zoomed In Look



Things to note:

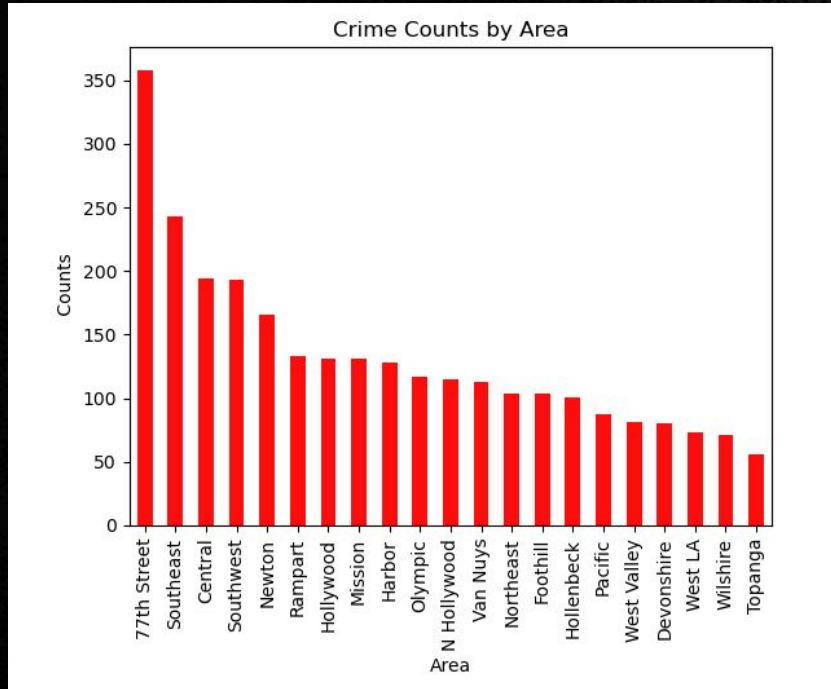
- More pickpocketing in tourist areas like downtown, Venice Beach, and Hollywood
- More arson and homicide in south LA

- PICKPOCKET
- KIDNAPPING
- CRIMINAL HOMICIDE
- ARSON
- THROWING OBJECT AT MOVING VEHICLE

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Crime by Location χ^2 Analysis



Hypothesis: All 21 police-defined areas have the same proportion of crime

Alt. Hypothesis: At least one of the 21 police-defined areas has a different proportion of crime

Test Statistic: 719.02

Critical Value: 31.41

Conclusion: We can conclude that at least one area has significantly different proportions of crime

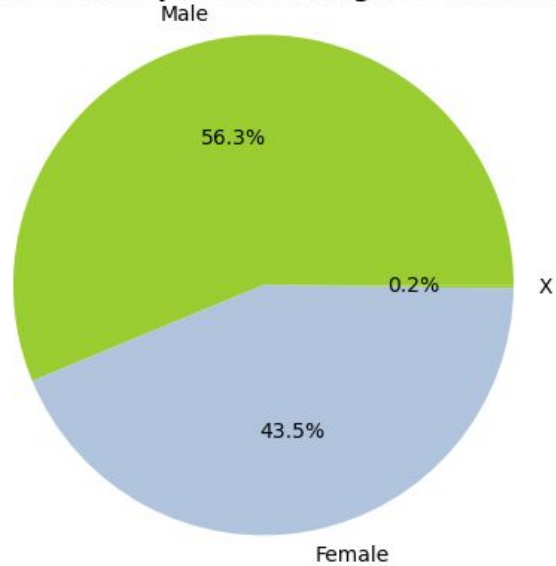


Victim Demographics



Victim Sex

Victim Sex in Reported Los Angeles Crime 2015

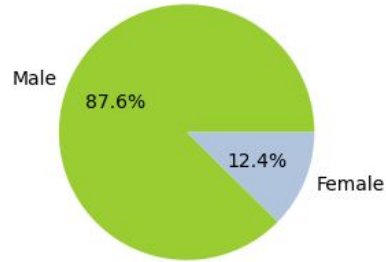


Males are more likely to be victims of crime.

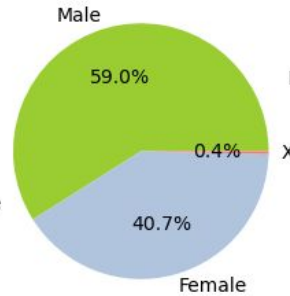


Victim Sex in Reported Los Angeles Crimes 2015

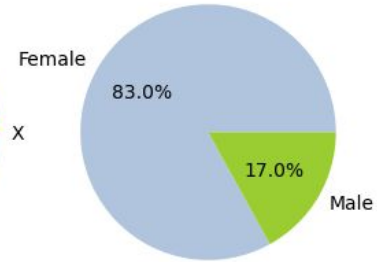
Criminal Homicide



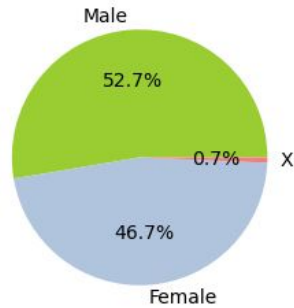
Arson



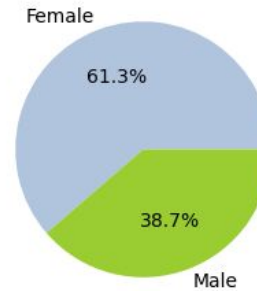
Kidnapping



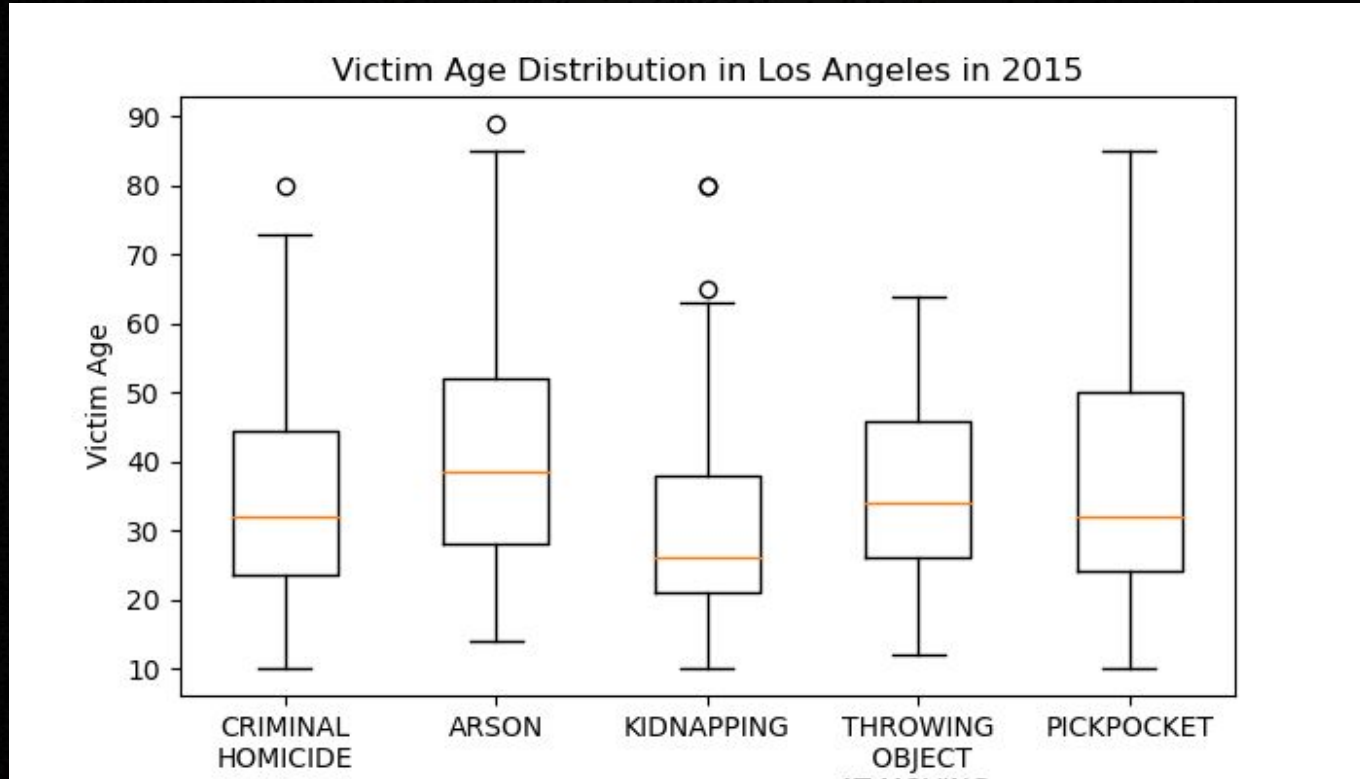
Throwing Object at Moving Vehicle



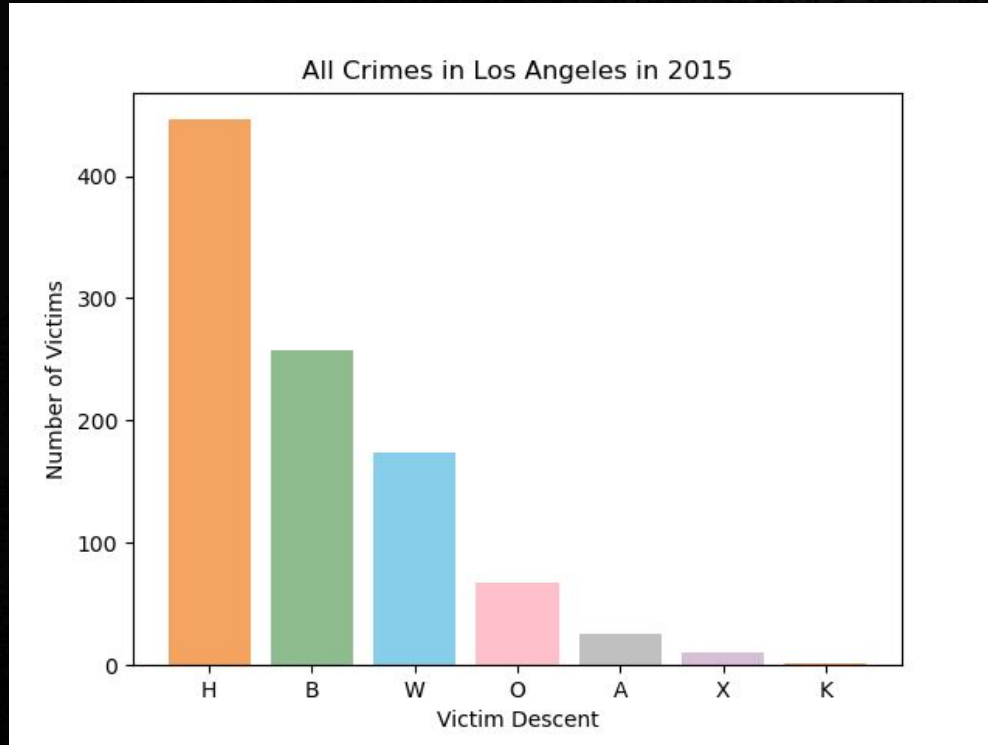
Pickpocket



Victim Age



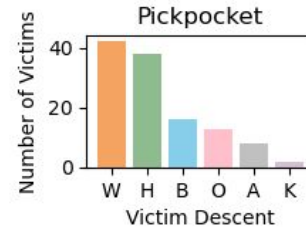
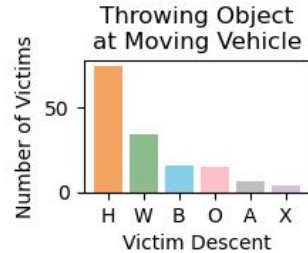
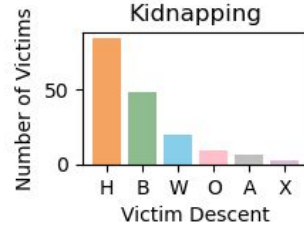
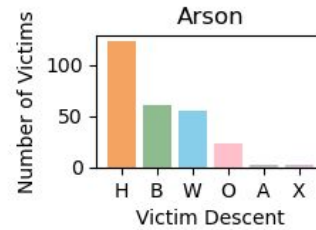
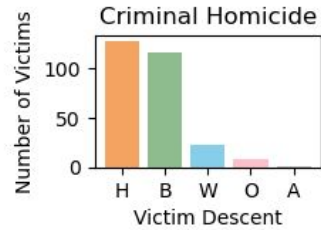
Victim Descent



People of Hispanic, Black and White descent are more at risk of being victims of a crime.



Victim Descent in Reported Los Angeles Crimes 2015

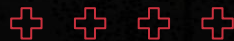


Time vs. Crime



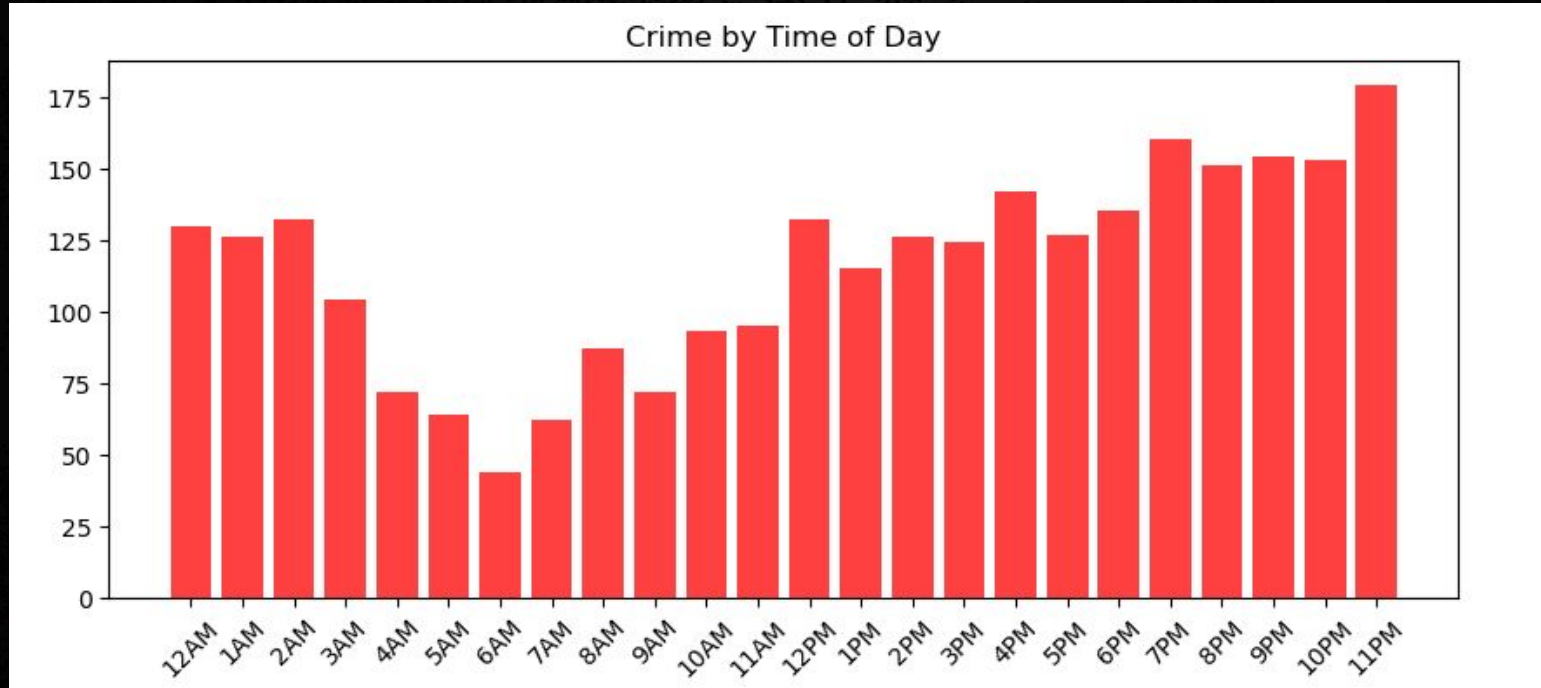
Lead foot in the mud

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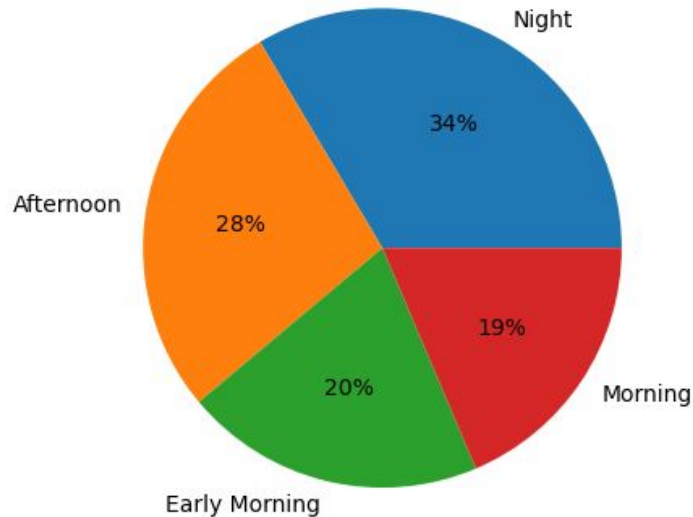
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Crime by Hour of Day



Crime by Relative Time Category

Crime by Time of Day

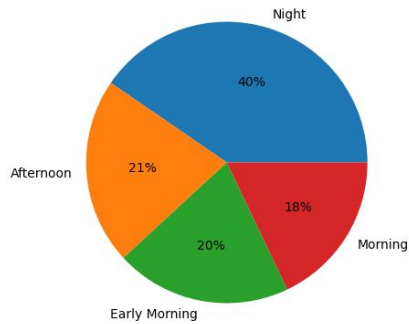


- Most crime happening at night or in the afternoon

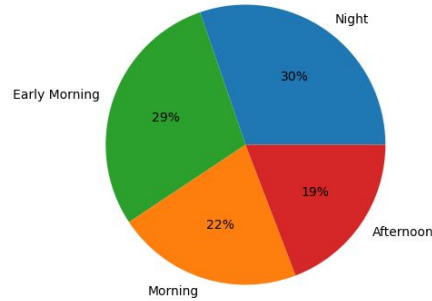


Crime by Type of Crime and Time Category

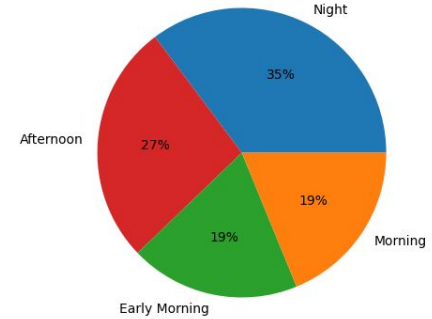
When does Murder Happen?



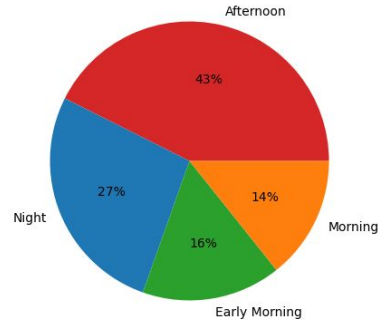
When Does Arson Happen?



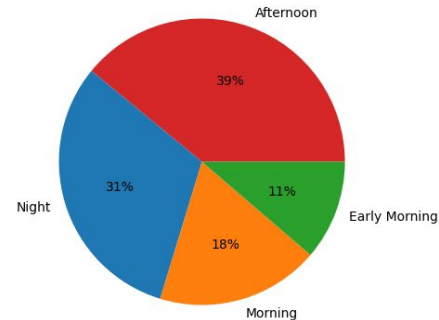
When Does Kidnapping Happen?



When Does Pickpocketing Happen?



When do things get thrown at vehicles?



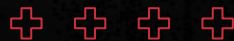
Season vs. Crime

Per Crime Category



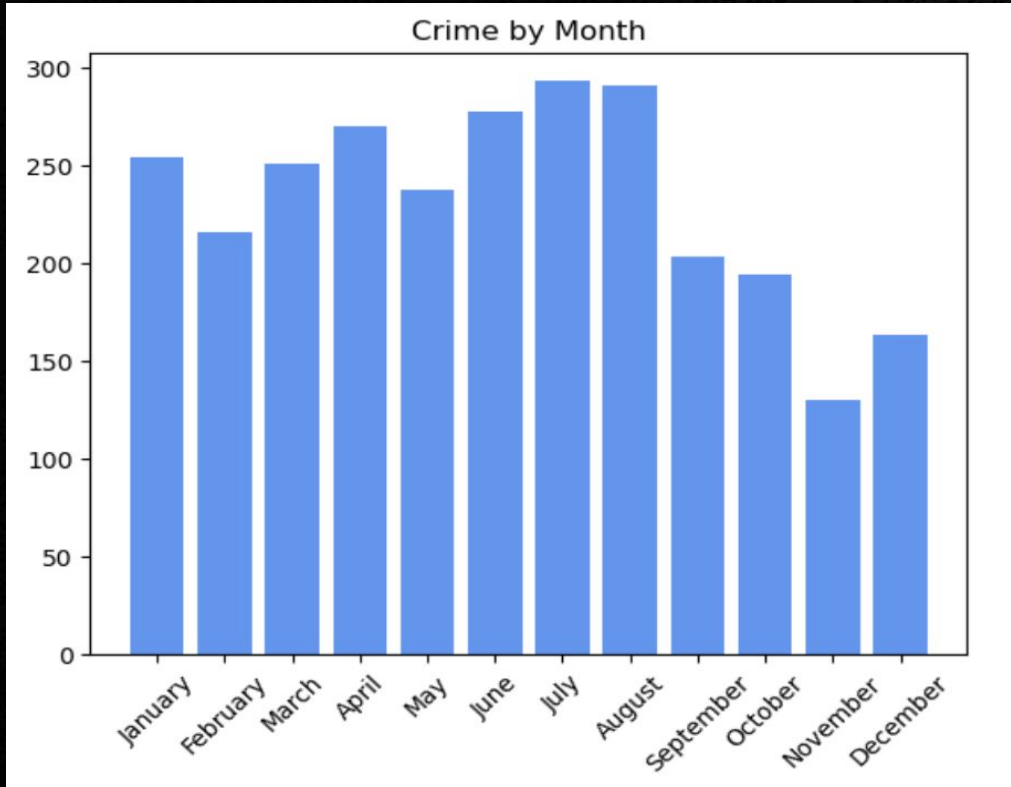
Lead put in the car

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Crime By Month



χ^2 Analysis

Hypothesis: For all five crime categories the time of year has no effect on the level of crime committed.

Alternative Hypothesis: The time of year has an impact on the level of crime committed.

Test Statistic: 126.282

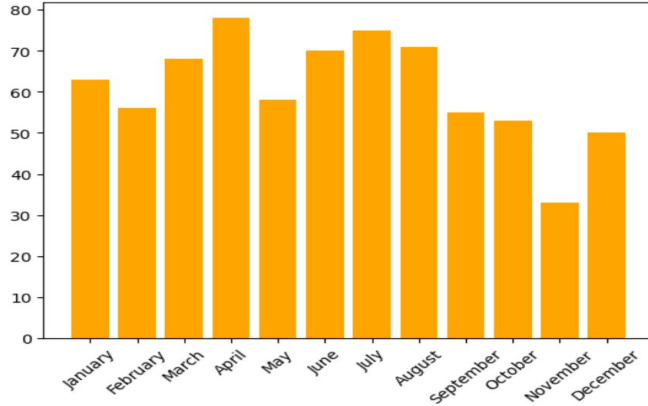
Critical Value: 19.675

P-Value : 9.8222515611252e-22

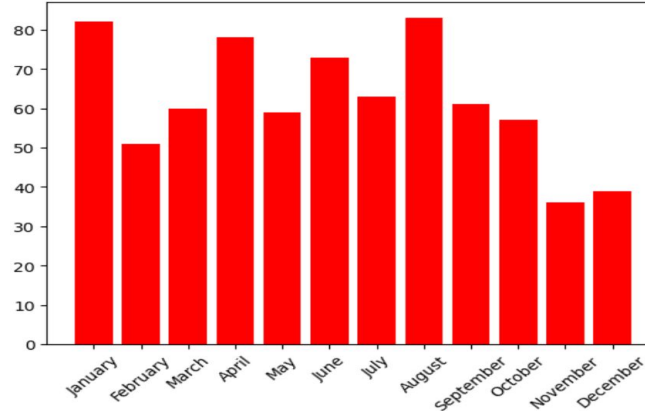


Crime by Type for the Year

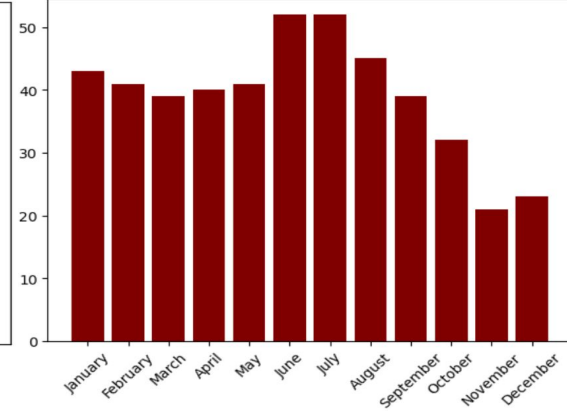
Arson



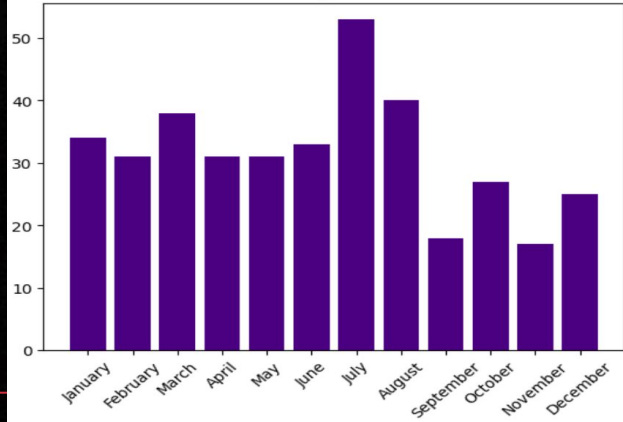
Criminal Homicide



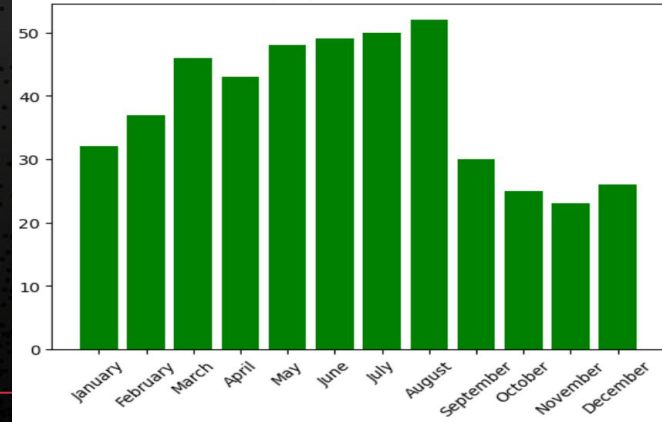
Kidnapping



Pickpocket



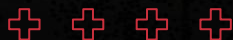
Throwing Object at Moving Vehicle



Weather vs. Crime



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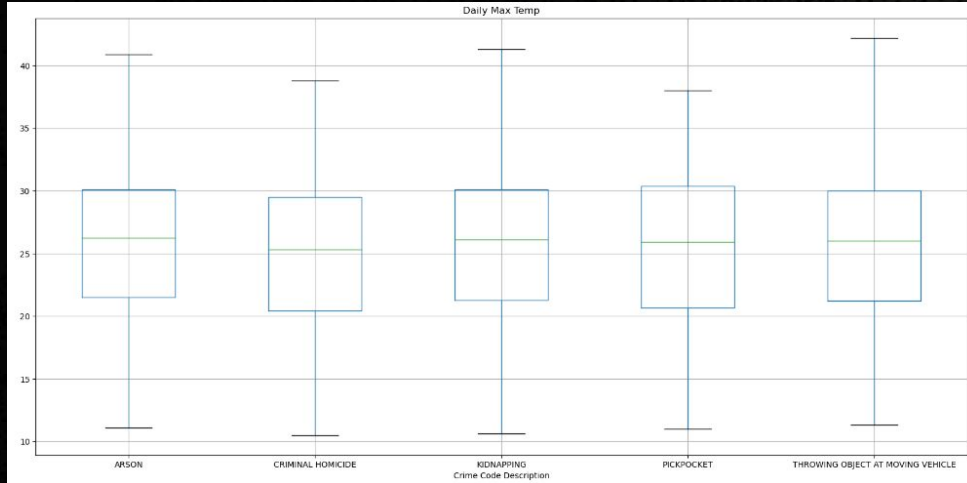
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Open Meteo API

- Obtain data, latitude, and longitude for each crime
- Use `.iterrows()` to loop through data and make a request for the hottest temperature in the area on that day
- Store temperature in a different column
- Expensive code, took ~15 min



Average Temperature vs. Type of Crime ANOVA



Hypothesis: The average temperature at time of crime is equal for each type of crime

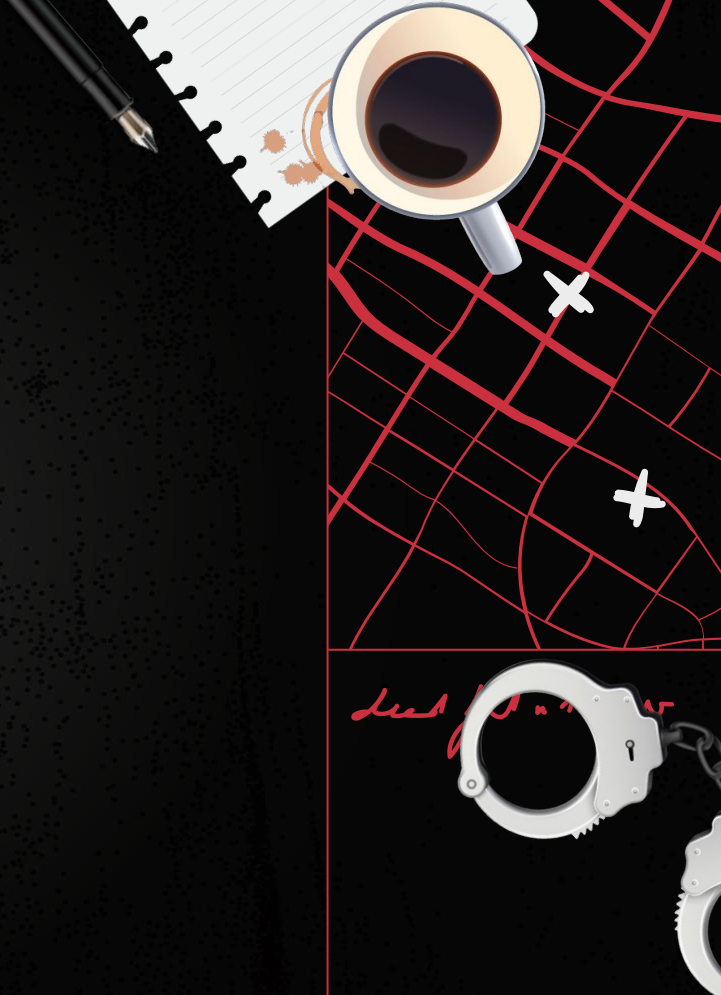
Alt. Hypothesis: The average temperature at time of crime is different between types of crime

P-Value: .47

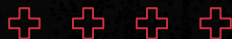
Conclusion: There is not enough evidence to suggest that the mean temperature is different based on the type of crime



Heat vs. Crime

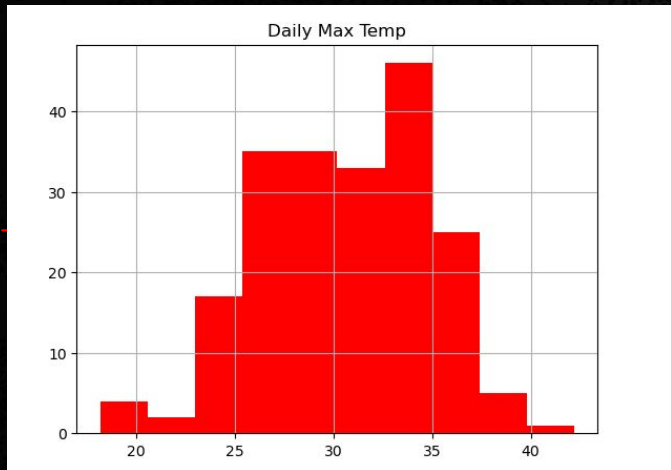


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Do people commit more crimes on hotter days?



Temperatures From
September Days With Crime

Even though we had very comprehensive data, this questions was difficult to answer, as we only had data from days there WAS crime, and not data from all days.

We decided to focus on september, as that was the hottest month in the year of 2015 according to the [L.A. Almanac](#)



T-Test on Average Temperature

Hypothesis:

The average temperature of days with crime is not different than the average temperature of the month

Alt. Hypothesis:

(78.7 degrees Fahrenheit)

The average temperature of days with crime is significantly higher than the average temperature of the month

P-Value:

.03

Conclusion:

We can reject the null hypothesis and conclude that there is sufficient evidence to suggest that the mean temperature while crimes were being committed is statistically significantly different than the average temperature





Findings on Crime in LA in 2015

(Murder, Arson, Kidnapping, Pickpocketing, Throwing Objects at Vehicles)

- Area DOES have an effect on the amount of crime
- The time when crime happens is different based on the TYPE of crime
- Weather does NOT have an effect on the TYPE of crime happening
- Crimes DO happen at different average temperatures than the monthly average (for September)
- Males, those in their thirties, and those of Hispanic descent are more likely to be victims of a crime
- Time of year does have an effect on types of crimes committed

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