

San Francisco **Crime** Analysis

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01.

Problem

02.

Objective

03.

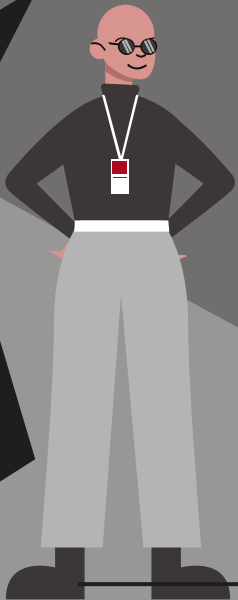
Data Source

04.

**Online Analytical
Processing(OLAP)**

05.

Conclusion & Results



01.

Problem





According to the FBI's Uniform Crime Report, San Francisco had a relatively high crime rate compared to other cities in the United States.




Law enforcement agencies need to work more efficiently and effectively to prevent and reduce crime.



Travellers should increase awareness of safety situations.



02. **Objective**



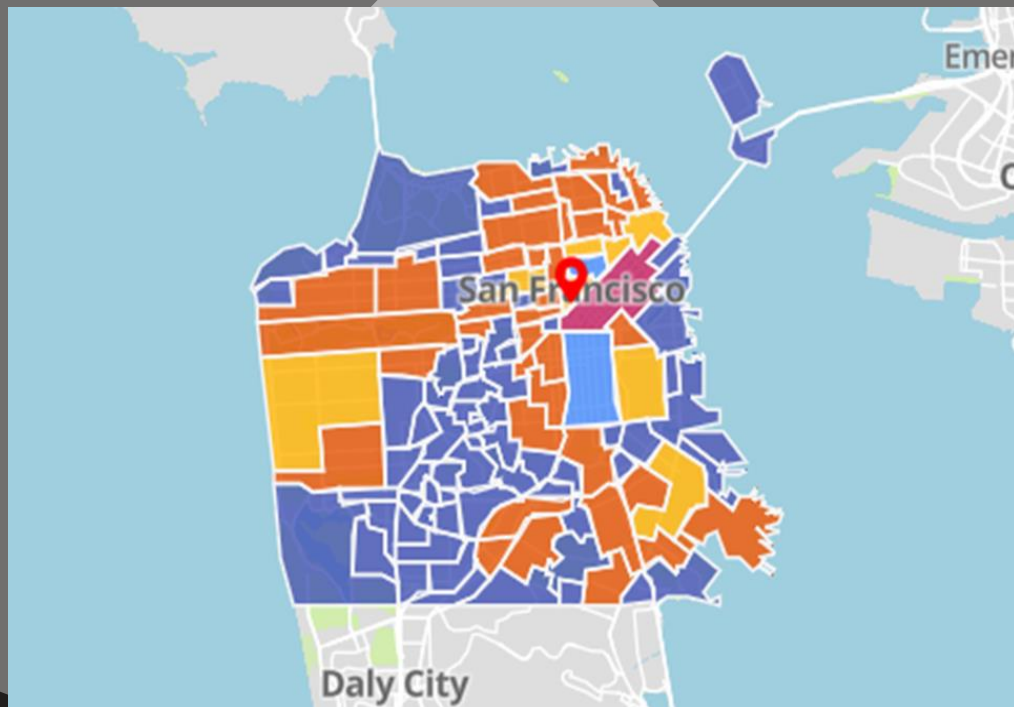
Using data to analyze the safety situation of San Francisco, providing travel recommendations to tourists and helping law enforcement agencies identify crime patterns and better allocate resources.

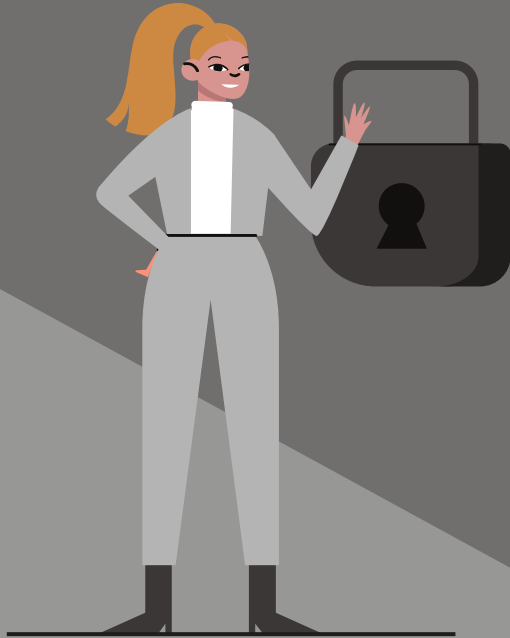
03.

Data Source

Police Department Incident Reports:
Historical 2003 to May 2018







04.

DATA ANALYSIS

Online Analytical Processing(OLAP)

**Number of crimes for
different category**

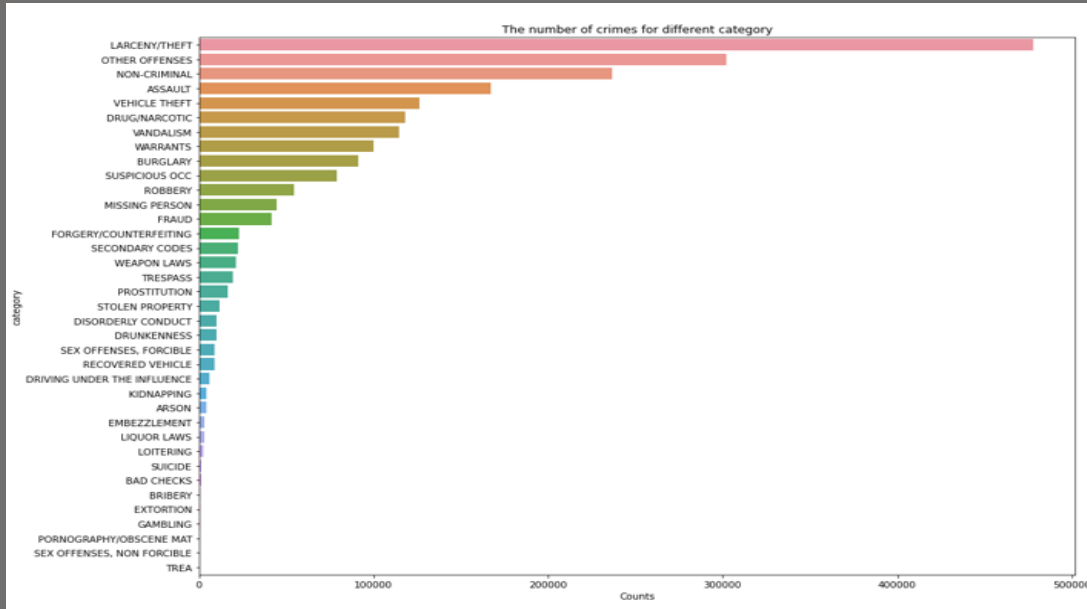
**Number of crimes for
different districts**

**Number of crime in
each month of 2015,
2016, 2017, 2018.**

**Number of crime w.r.t
the hour in certain day
[2015/12/15, 2016/12/15,
2017/12/15]**



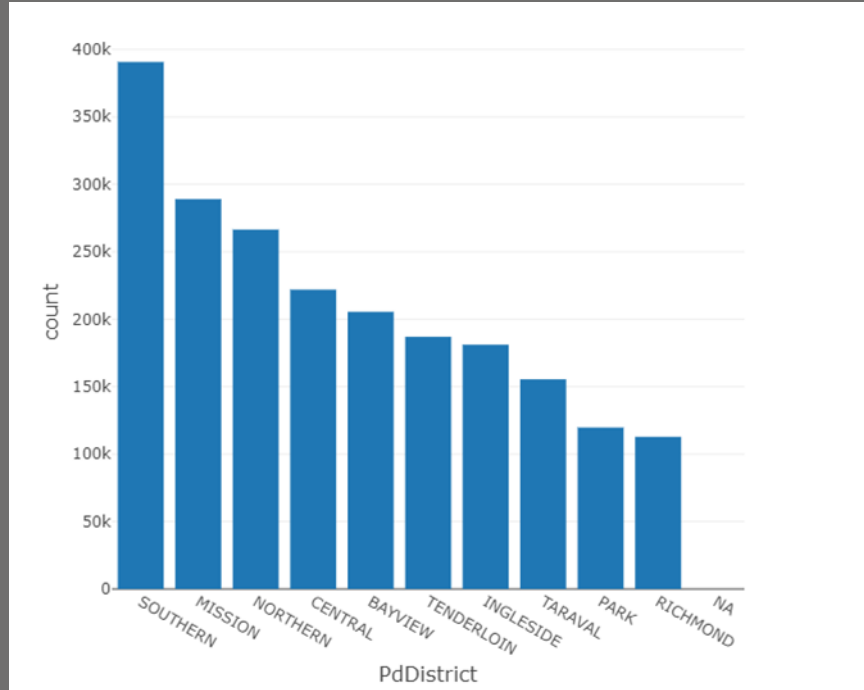
Number of crimes for different category



Top five most common crimes:

- Larceny/Theft
- Other Offenses
- Non-Criminal
- Assault
- Vehicle Theft

Number of crimes for different districts

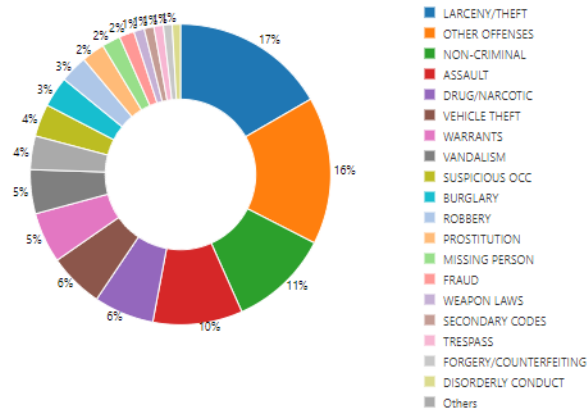


Top three districts with the most crimes:

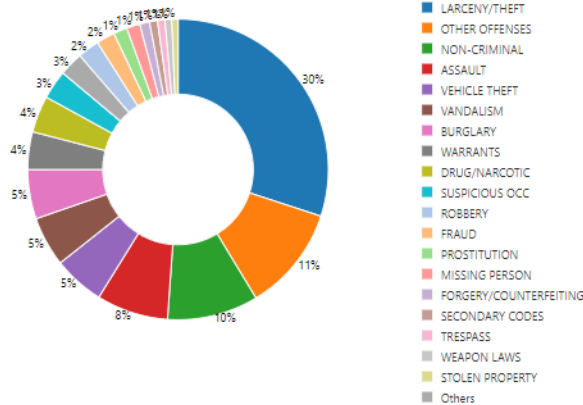
- Southern
- Mission
- Northern

The Top-3 **Danger** Districts and their crime composition

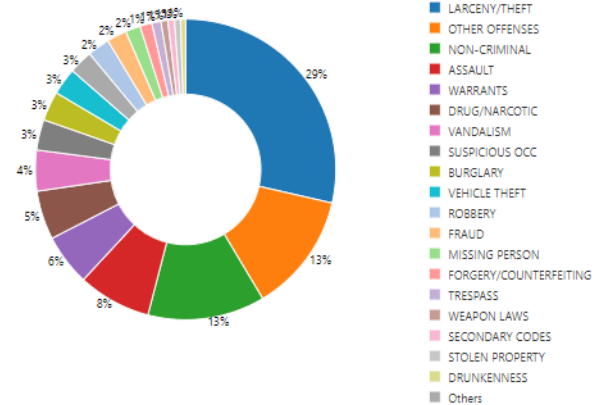
MISSION



NORTHERN



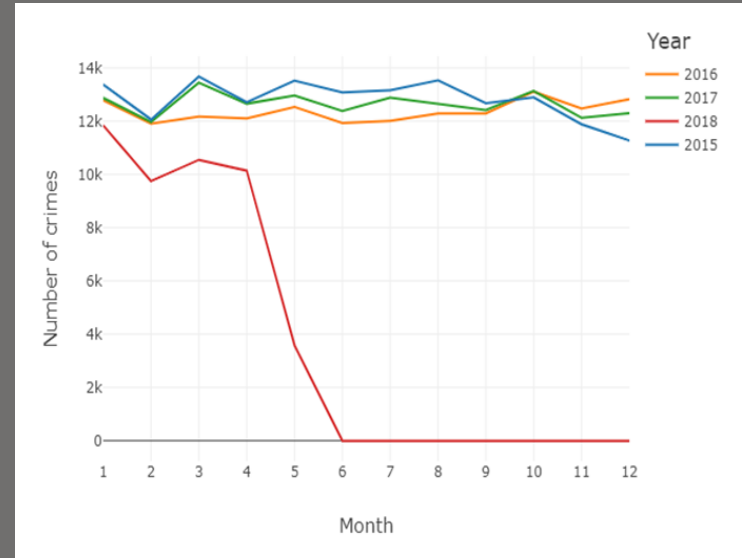
SOUTHERN



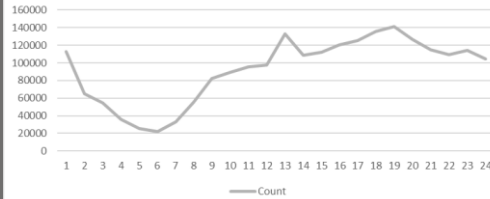
The three pie charts reveal that the distribution of the top five most common crime categories is consistent across the three blocks. However, by examining the fifth most frequent crime type, it becomes apparent that drug trafficking is more prevalent in the Mission district, car theft is more prevalent in the Northern district, and there are more incidents involving warrants in the Southern district.

Number of crime in each month of 2015, 2016, 2017, 2018.

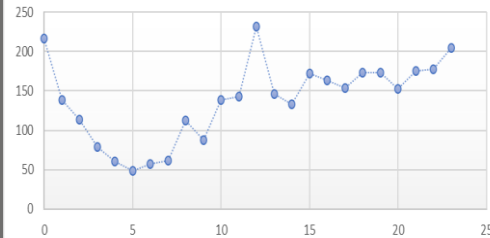
- Each month's crime totals from 2015 to 2017 are distributed equally.
- Since February 2018, the quantity of crimes has dramatically decreased. Since February 2018, there have been about 2000 fewer offences than normal.
- A significant factor in the above-mentioned crime decline may be the over 1000 crime decrease in larceny/theft since February 2018.
- Potential Business Impact: Given that there have been fewer larceny crimes recorded in San Francisco, some stores, such as jewelry and smartphone stores, will have a better atmosphere as of 2018.



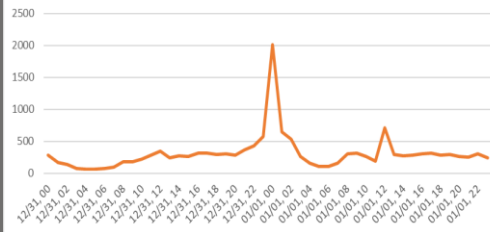
Number of crime by hour for all records



Number of crime by hour for records in Christmas



Number of crime by hour for records in New Year Eve
(12/31 - 01/01)



Number of crime w.r.t the hour in certain day (2015/12/15, 2016/12/15, 2017/12/15)

- In sleeping time(1:00-7:00), offences are much less than other hours.
- Typically, violence would most likely be happening at lunchtime (12:00) and supper time(18:00). Therefore, visitors should pay close attention to how safe the restaurants are.
- Crimes would be concentrated around Christmas Eve and during lunch.
- Crime appears to have increased dramatically in the days leading up to the new year. In reality, it is not advised for tourists to go out during New Year's Eve hours due to safety reasons.

05.

Conclusion & Results



- In order to discover ideas for recommendations for the distribution of police authority and policy adjustment, statistics on SF crime from 2013 to 2018, totalling 2215024 records, are used for data analysis.
- Spark SQL is utilized for data cleaning, analysis, and OLAP visualization.
- The research indicates that the majority of crime incidents take place during lunch and supper in the SOUTHERN, MISSION, and NORTHERN areas, in which case the police force needs to be bolstered and concentrated.
- Additionally, during certain special holiday times, such as Christmas Eve and the approach to the New Year, crime incidents would significantly rise.