SF Police Department Incident Reports Analysis
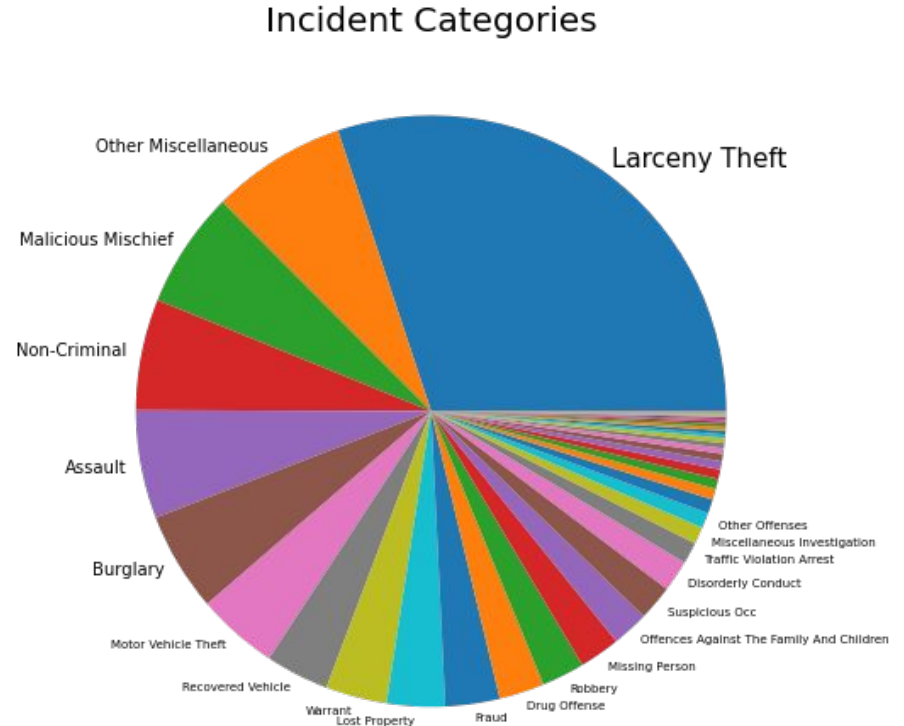
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Overview

- From 2018/01/01 to 2021/02/20, San Francisco Police Department (SFPD) tracked over 436K incident reports.

- There are more than 30 attributes in the database.

- Project focus:
  - What are the top incident categories in SF?
  - Where do the incidents more likely to occur?
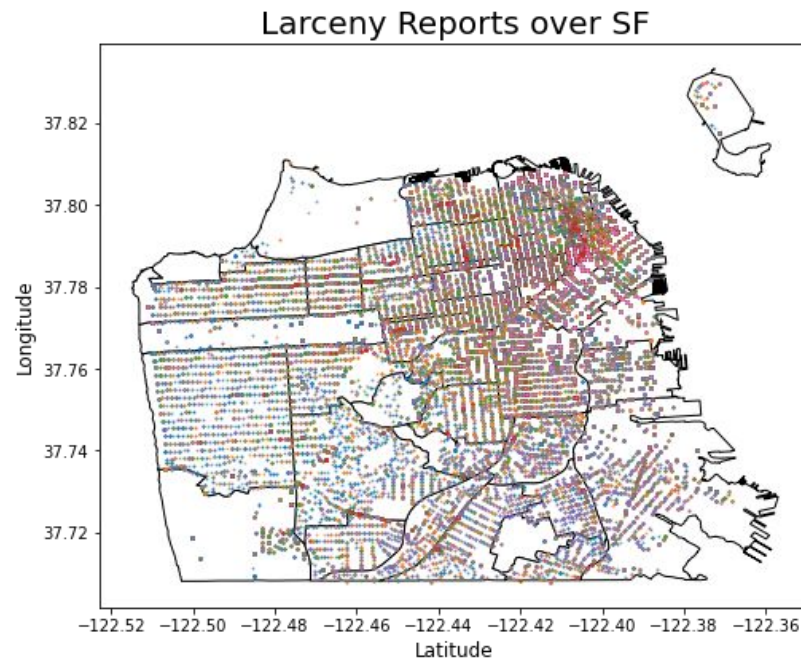 - How do the incidents trend over time?

Incident Category

- There are 51 incident categories.
- The top 5 are:
    - Larceny Theft - 131,316 (30%)
    - Other Miscellaneous - 32,171 (7%)
    - Malicious Mischief - 27,830 (6%)
    - Non-Criminal - 26,480 (6%)
    - Assault - 25,794 (6%)

Incident Categories

Larceny Theft

Other Miscellaneous

Malicious Mischief

Non-Criminal

Assault

Burglary

Motor Vehicle Theft

Recovered Vehicle

Warrant

Lost Property

Fraud

Drug Offense

Robbery

Missing Person

Offences Against The Family And Children

Suspicious Occ

Disorderly Conduct

Traffic Violation Arrest

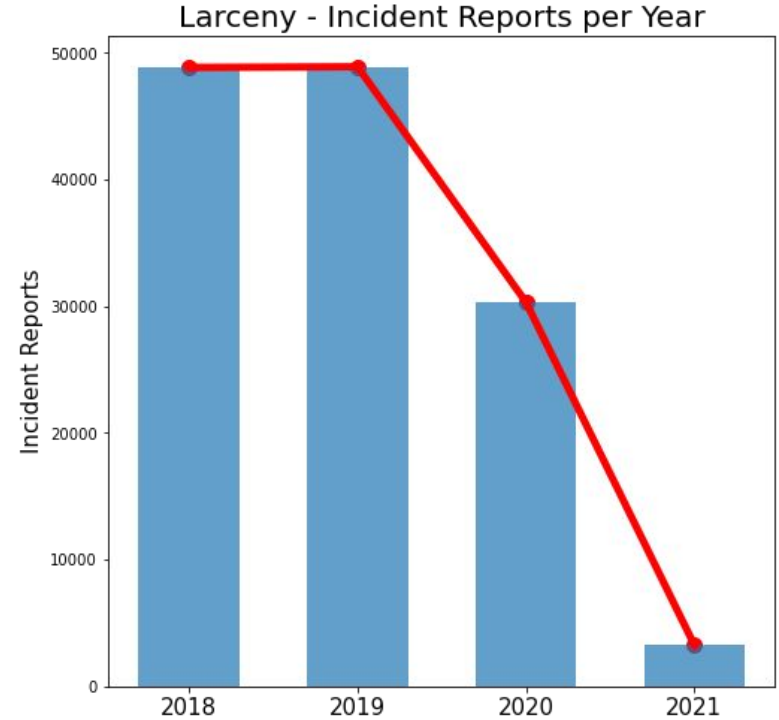Miscellaneous Investigation

Other Offenses

San Francisco Neighborhoods

- There are 41 neighborhoods in SF.
- The 5 neighborhoods with most larceny reports are:
  - Financial District/South Beach - 13,520 (11%)
  - Mission - 10,334 (9%)
  - Tenderloin - 7,612 (6%)
  - South of Market - 7,478 (6%)
  - North Beach - 5,955 (5%)
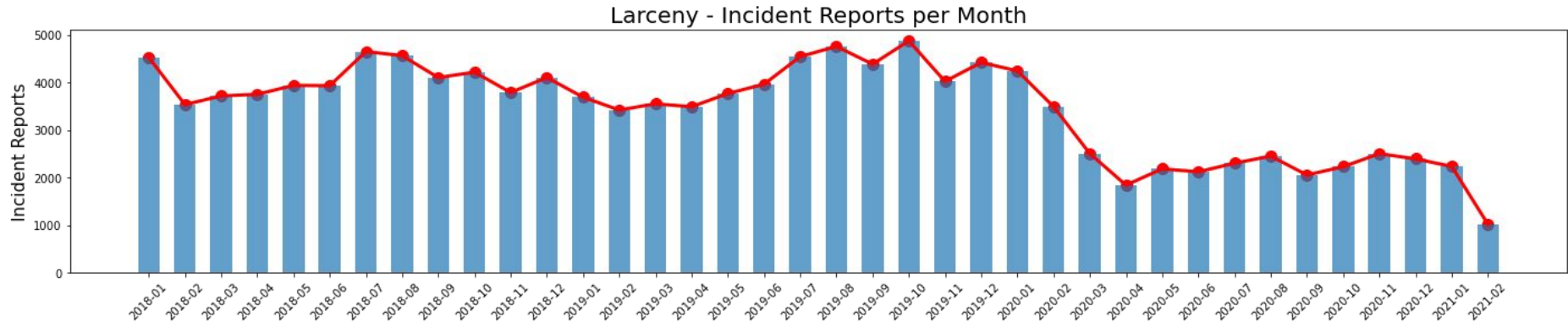

Larceny Reports over SF

Larceny Incident Reports per Year

- 2020 has significantly less larceny incidents.
  - 2018 - 48,841 (37.19%)
  - 2019 - 48,898 (37.24%)
  - 2020 - 30,323 (23.09%)

Larceny - Incident Reports per Year

Larceny Incident Reports per Month

- There is a noticeable drop in the number of incident reports in 2020-03 when sheltering at home started.

Larceny - Incident Reports per Month

Hypothesis Testing

Null Hypothesis: The rate of larceny in 2018 is equal to the rate of larceny in 2019.

Alternative Hypothesis: The rate of larceny in 2018 is different from the rate of larceny in 2019.

Alpha: 0.05

Assumptions:

1. Each larceny incident is an independent event. One incident doesn't lead to another or prevent another to happen.
2. Each larceny incident is committed by a different person in SF.

Two Samples:

1. 2018 sample:
   a. SF population in 2018 is 870,044.
   b. The number of larceny incident reports is 48,841.
2. 2019 sample:
   a. SF population in 2019 is 874,961.
   b. The number of larceny incident reports is 48,898.

Results

- Performed both **two sample t-test** and **Mann-Whitney u-test.**

	Two Sample T-Test	Mann-Whitney U-Test
p-value	0.4721	0.4721

- Both p-values are greater than alpha (0.4721 > 0.05).
- Failed to reject the Null Hypothesis.

Next Steps

- The effect of the COVID-19 pandemic on the rate of incident reports
- Analysis on other incident categories
- A comparative analysis on incident reports across other major American cities (e.g. LA, New York, Chicago)

Questions?