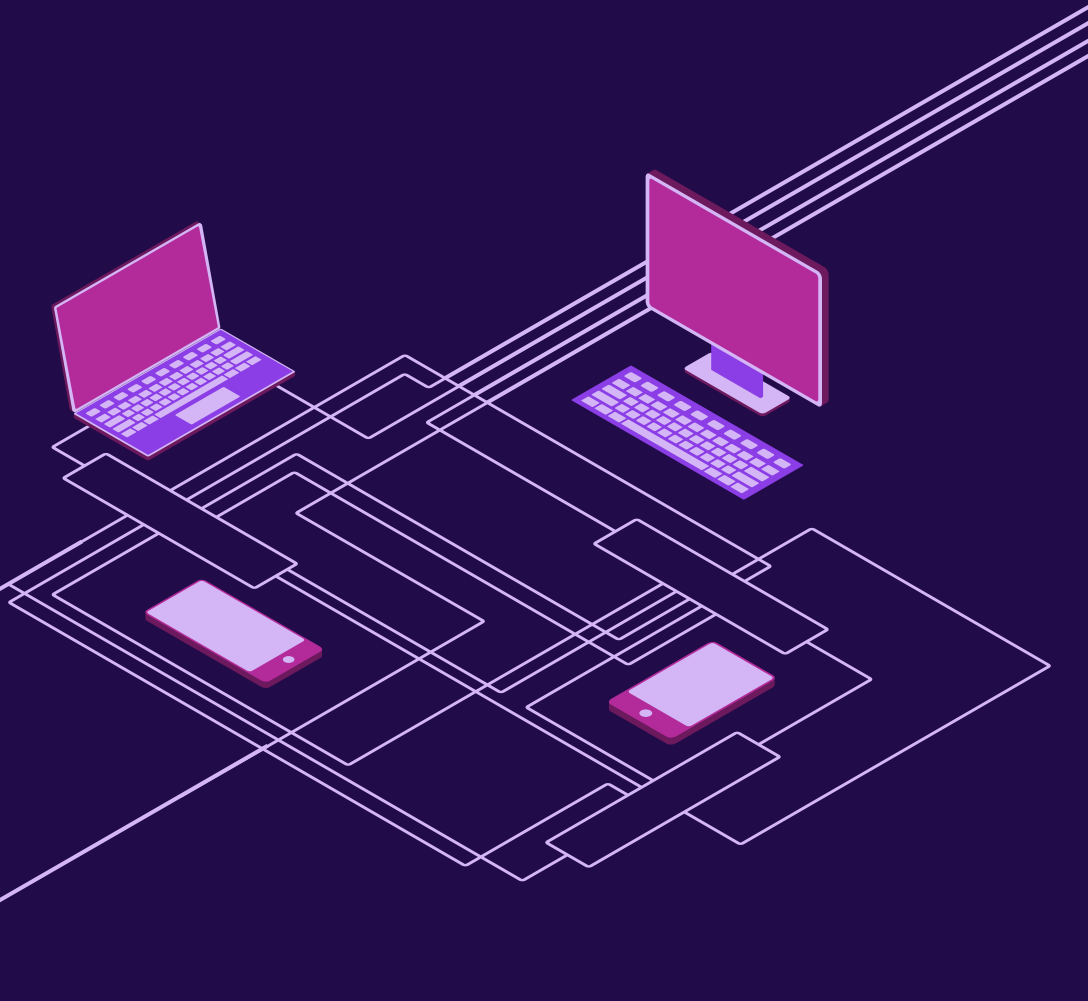


# CRIME

## IN SAN FRANCISCO

An interactive dashboard for public safety

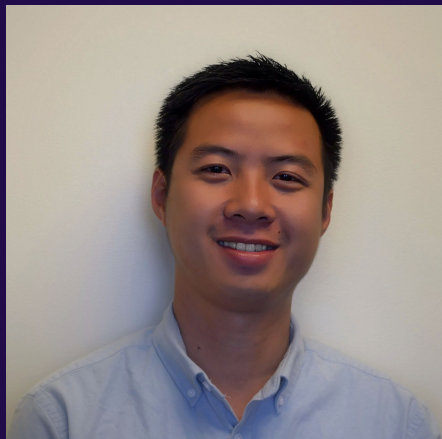


# OUR TEAM



**Chad Wakamiya**

IEOR '20



**Nhut Nguyen**

Data Science '20



**Anya Stepnova**

Data Science '20

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Current state of crime in San Francisco.

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**Background**

## Background

San Francisco is the nation's leader in property crime including burglary, larceny, shoplifting, and vandalism.

The FBI data released in 2018 showed the city had the highest per-capita rate of property crimes among the 20 most populous U.S. cities in 2017, tallying

**6,168** crimes per **100,000** people.



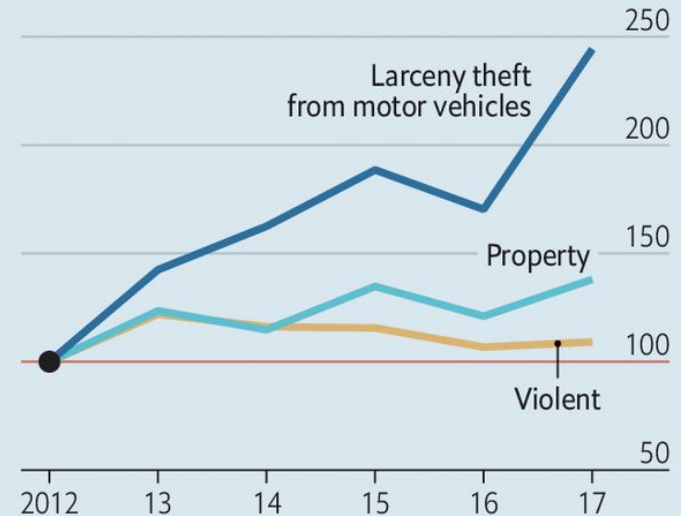
# Background



The increasing crime rates put higher toll on SF police department every year and  
**EFFECTIVE DISTRIBUTION OF HUMAN RESOURCES** becomes more vital.

## Bay City Robbers

San Francisco County, crimes, 2012=100



Source: OpenJustice

# Background

Regular citizens are concerned with crime rates as well, often making their decisions of where to **LIVE** and **INVEST** based on **SAFETY** rating and overview.



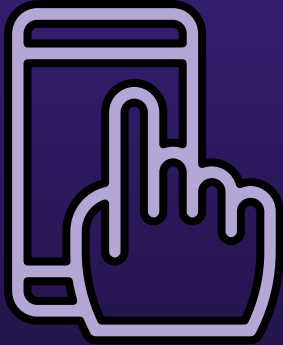


2

**Mission Statement**



We put our efforts together to create a simple and effective forecasting tool that both individual citizens and law enforcement are able to use in order to make their decisions more effectively.



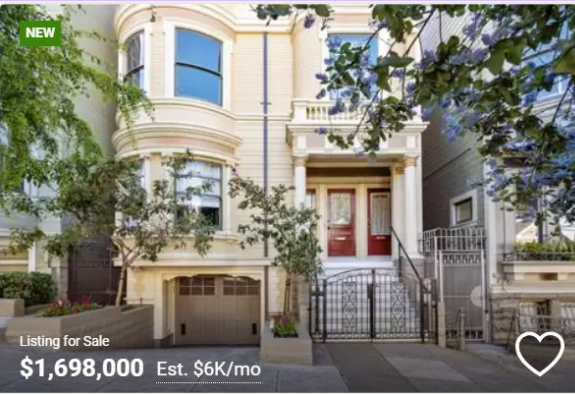



**3**

**Use Case:  
Home Owner & Police**

John is looking to buy a house in San Francisco. He has 2 young children, so neighborhood safety is a high priority.

## House 1



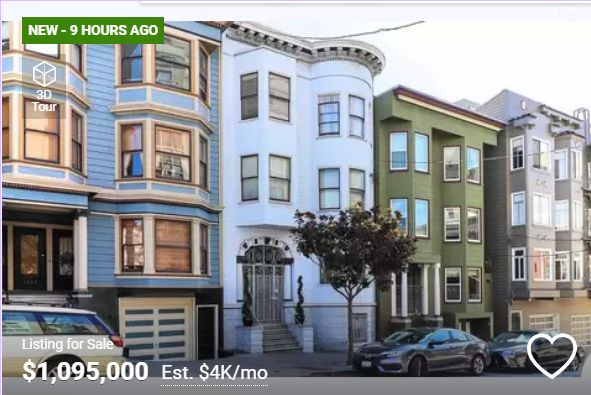
**NEW**

Listing for Sale  
**\$1,698,000** Est. \$6K/mo

3 bed 2.5 bath 1,758 sqft 3,188 sqft lot  
1241 Masonic Ave,  
San Francisco, CA 94117

Email Agent

## House 2



**NEW - 9 HOURS AGO**

3D Tour

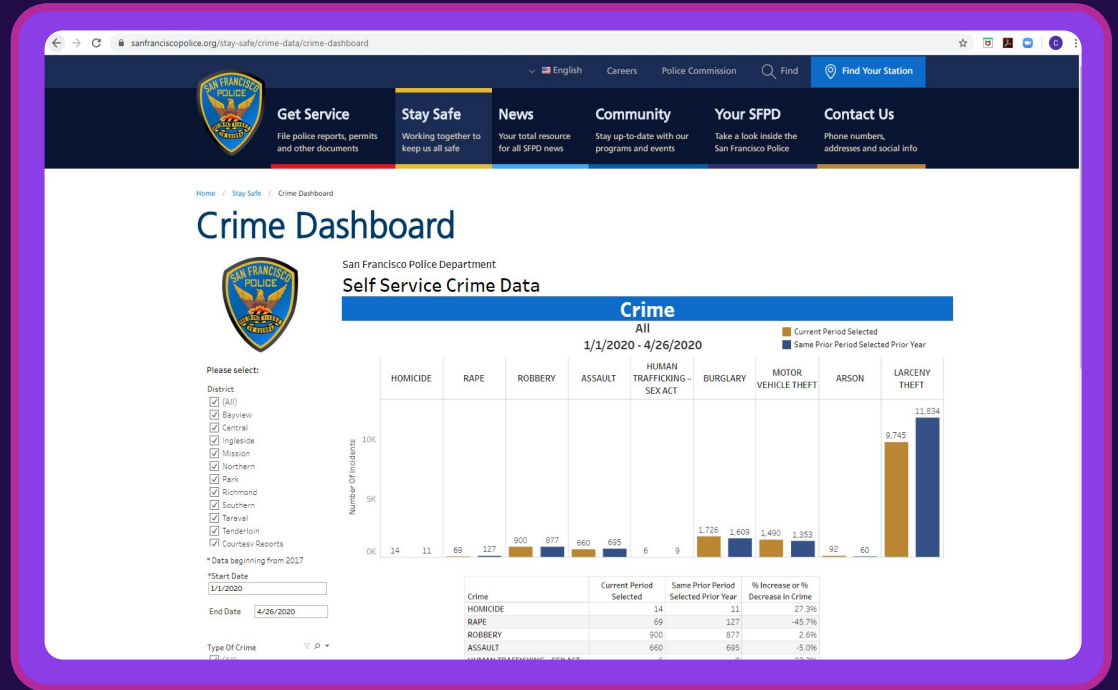
Listing for Sale  
**\$1,095,000** Est. \$4K/mo

3 bed 1 bath 1,445 sqft  
1314 Larkin St,  
San Francisco, CA 94109

Email Agent

# SIMILAR PRODUCTS

He views the dashboard provided by the **SF Police Department**. However, it's missing data at the neighborhood level.

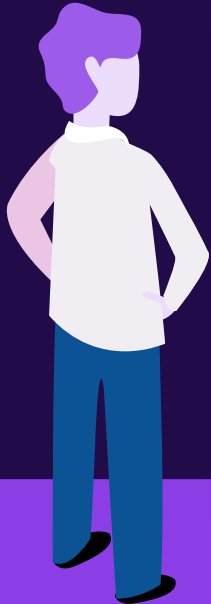


Sheriff Sandra needs to determine how to allocate police officers throughout San Francisco police districts.

**Tenderloin**



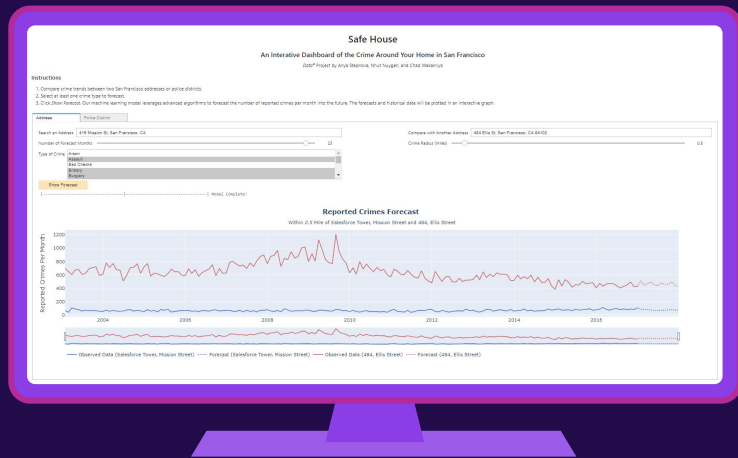
**Richmond**



# SIMILAR PRODUCTS

She also views the dashboard provided by the **SF Police Department**. It shows current data, however, she'd like to forecast data in each police district.





# THE SOLUTION

*Safe House* - An interactive, machine learning powered, dashboard that allows you to forecast and visualize crime around your potential homes or a police districts!



Link to Demo Video:

[https://github.com/nhut-nguyen1503/IEOR\\_135\\_Project/blob/master/SF\\_Crime\\_Demo.mp4](https://github.com/nhut-nguyen1503/IEOR_135_Project/blob/master/SF_Crime_Demo.mp4)





4

**THE SOLUTION**

# PRODUCT FEATURES

## High granularity

Neighborhood level data is necessary

## Ability to compare

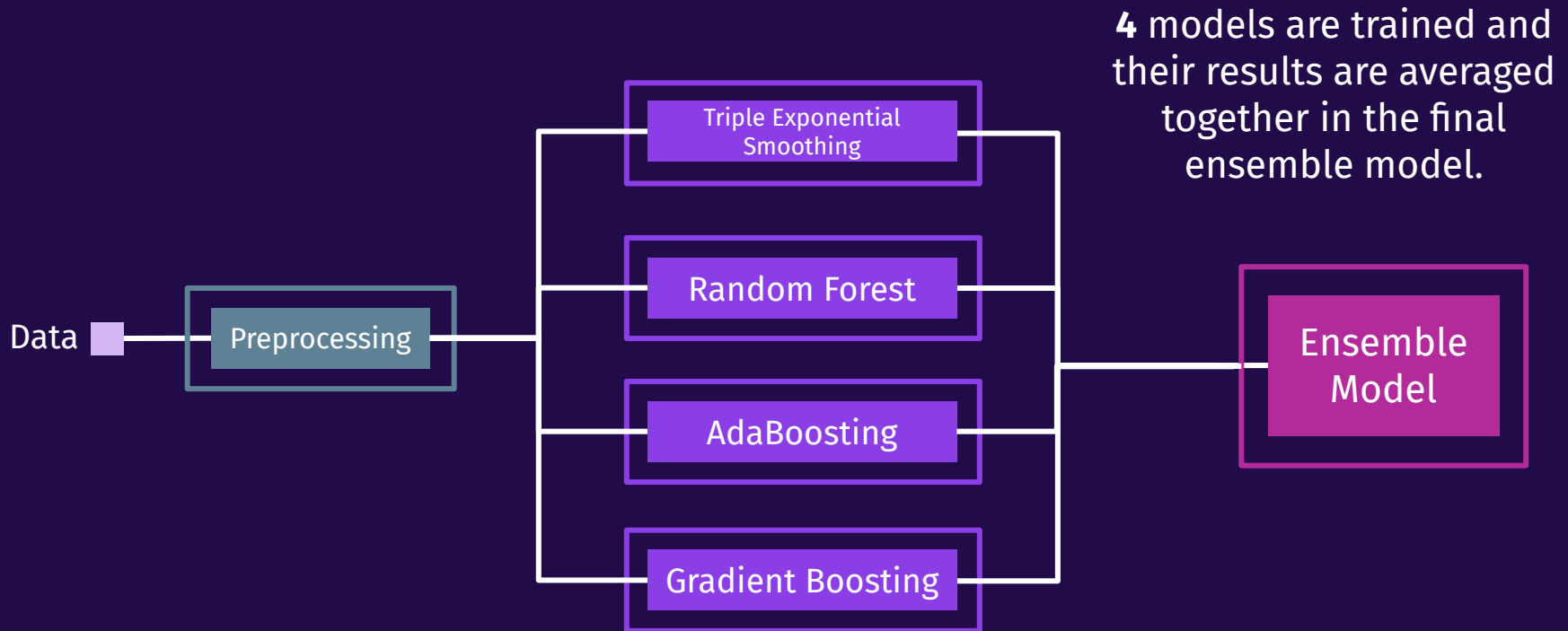
Draw conclusions and act

## Insights for the future

Forecasts changing crime trends



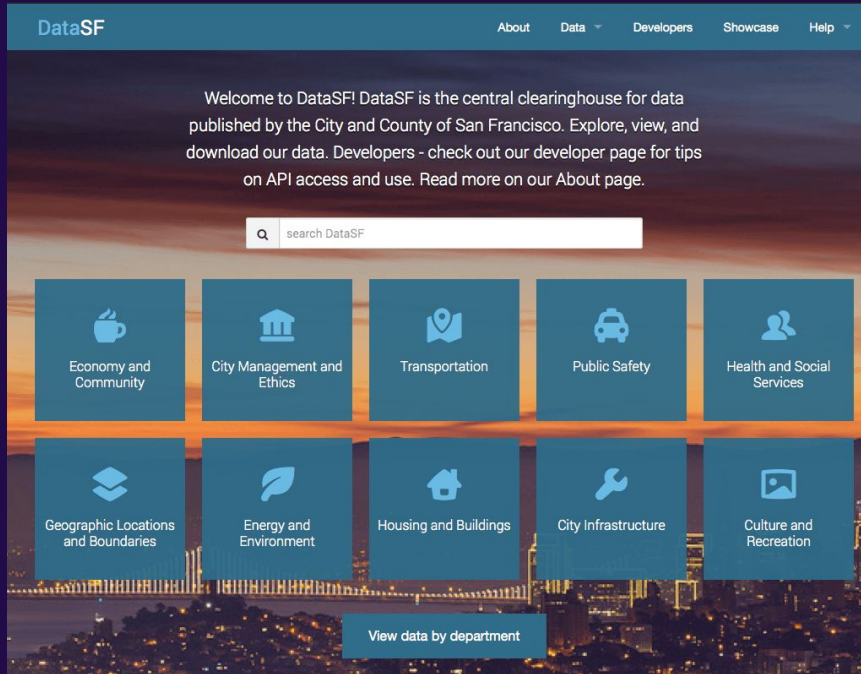
# Machine Learning Model





**5**

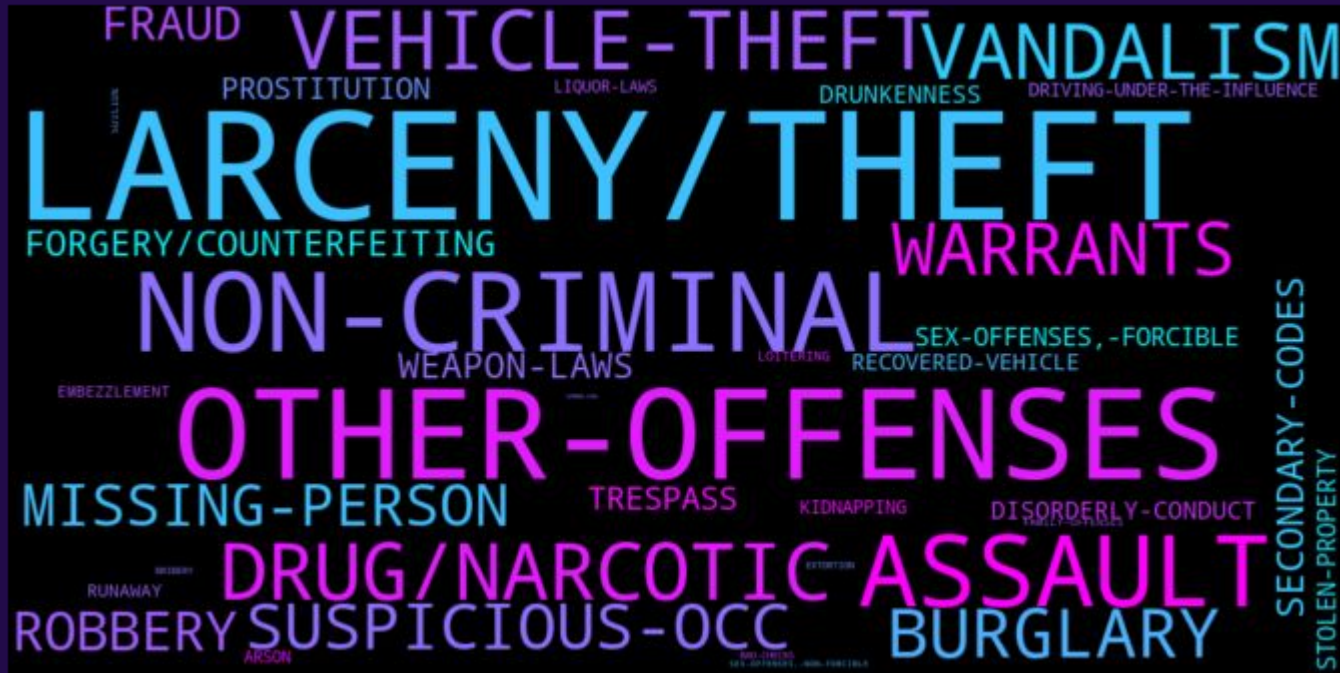
# **Exploratory Data Analysis**



# Data Collection

The data is collected from [www.datasf.org](http://www.datasf.org)  
The dataset is “Police Department Incident Reports from 2003 to May 2018” with 2,215,024 data points and 33 columns

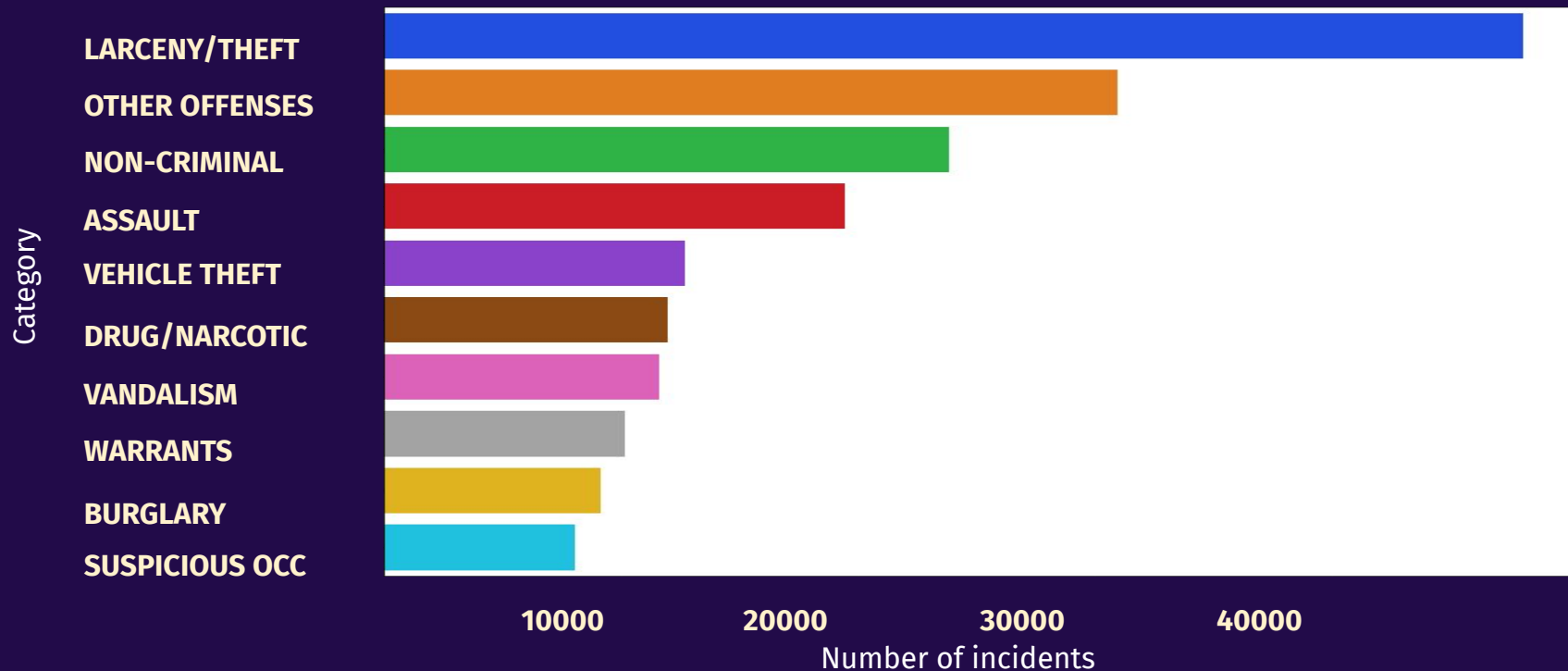
# Data Visualization



The frequency of crimes in San Francisco

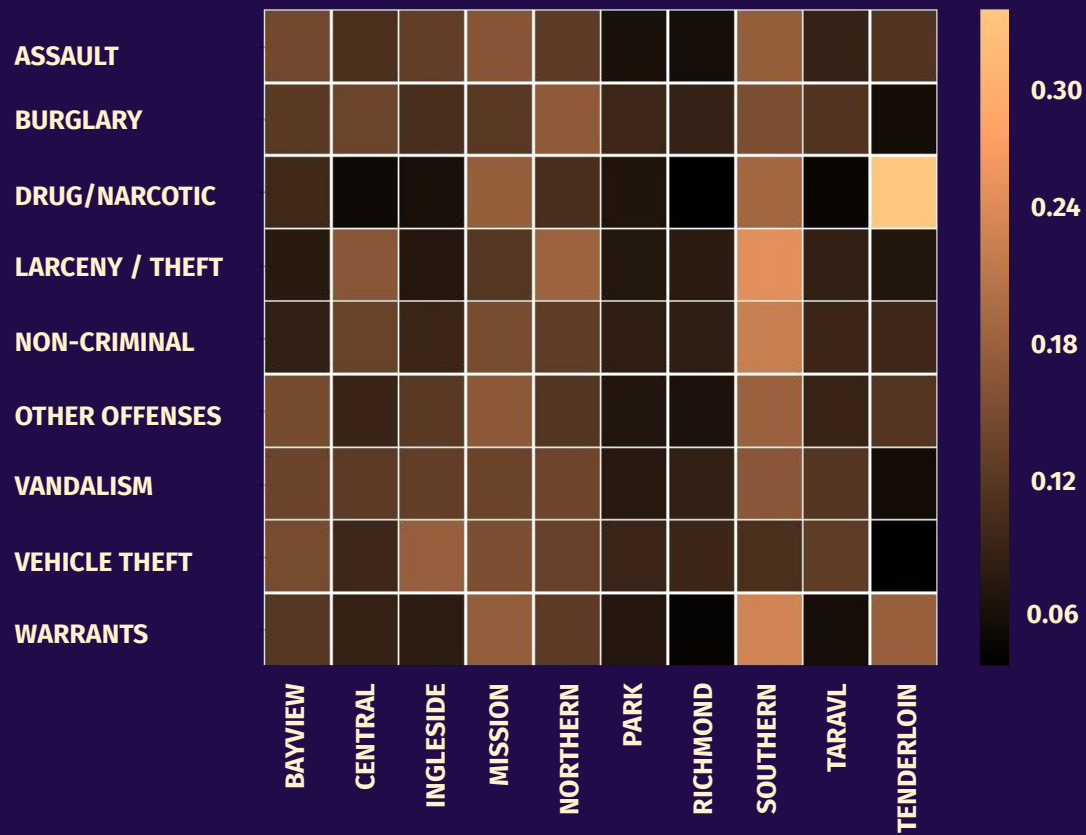
# Data Visualization

## The top 10 crimes in San Francisco



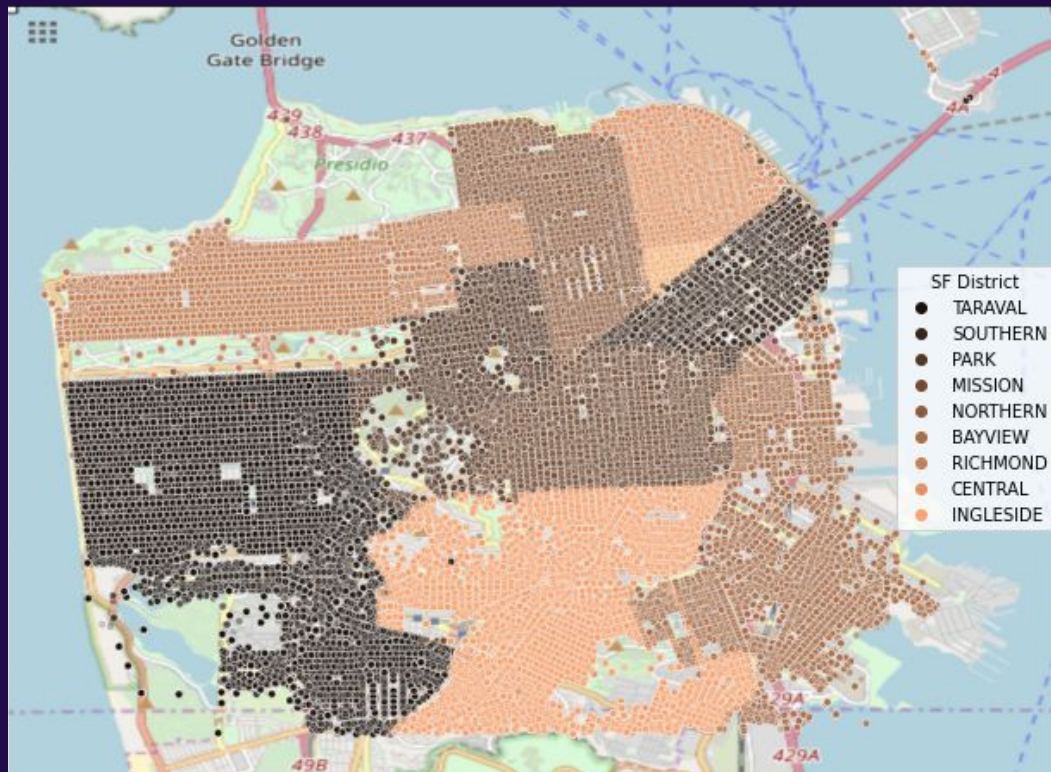
# Data Visualization

The distribution of crime per district



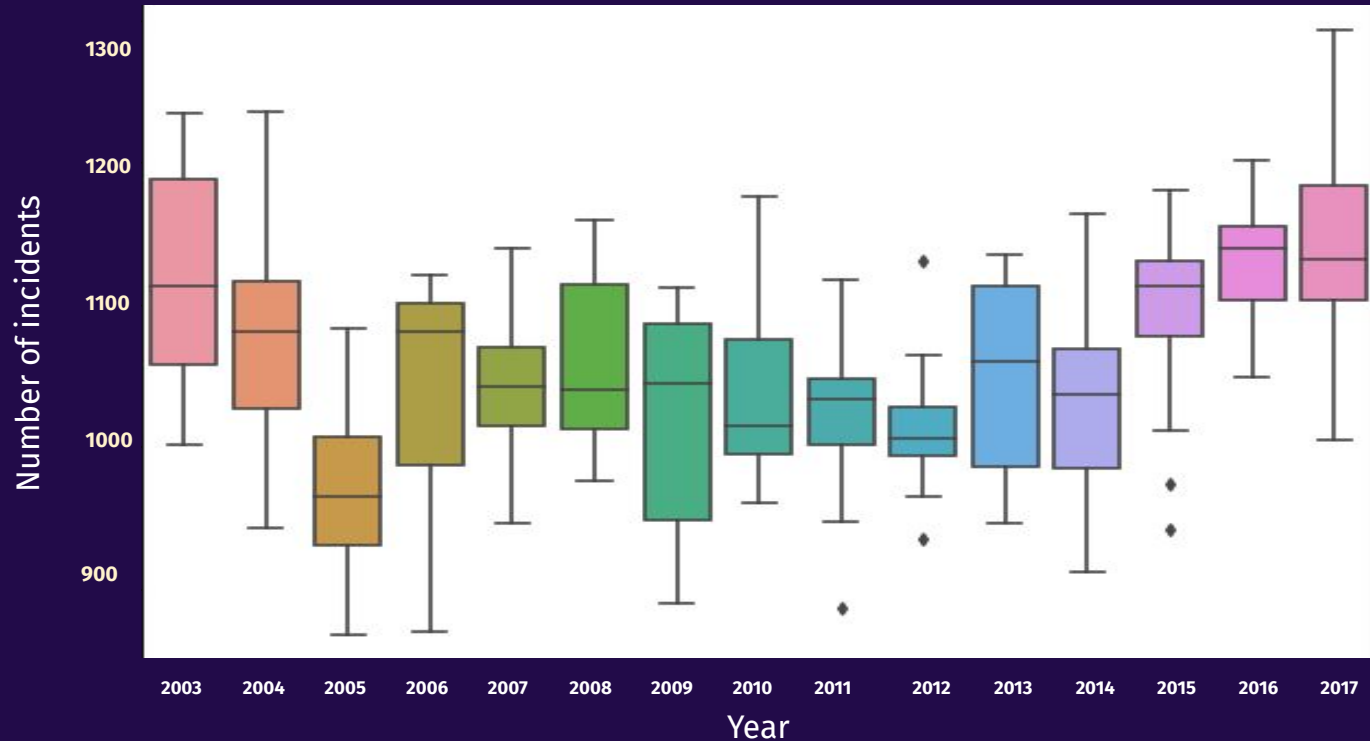


# Data Visualization



# Data Visualization

## The Year-wise Number of Crimes





6

**FUTURE  
DEVELOPMENT**

## Next Steps

**Develop a mobile app based on current UI/UX design**

**Enhance Cloud Analytics to draw insight and visualization quicker**

**Utilize and apply these tools in different industries and different locations**

## Future Development



**THANKS!**



**Reference Code:**

[https://github.com/nhut-nguyen1503/IEOR\\_135\\_Project](https://github.com/nhut-nguyen1503/IEOR_135_Project)