

**Data Exploration and Visualization – Crime
Rate Analysis for Chicago and San Francisco
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By

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Objective and Approach

Objective:

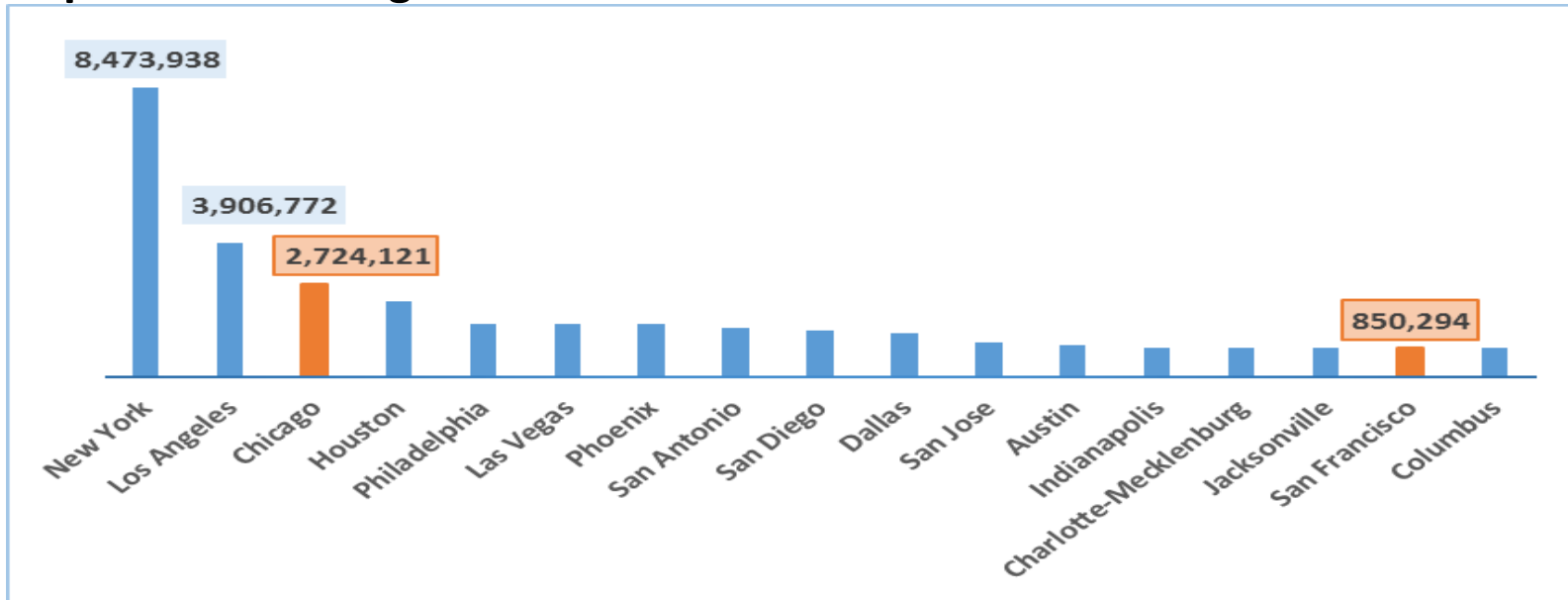
Assess the Violent Crime rates in Chicago and San Francisco, based on the historical data.

Approach for Data Understanding and Data Preparation:

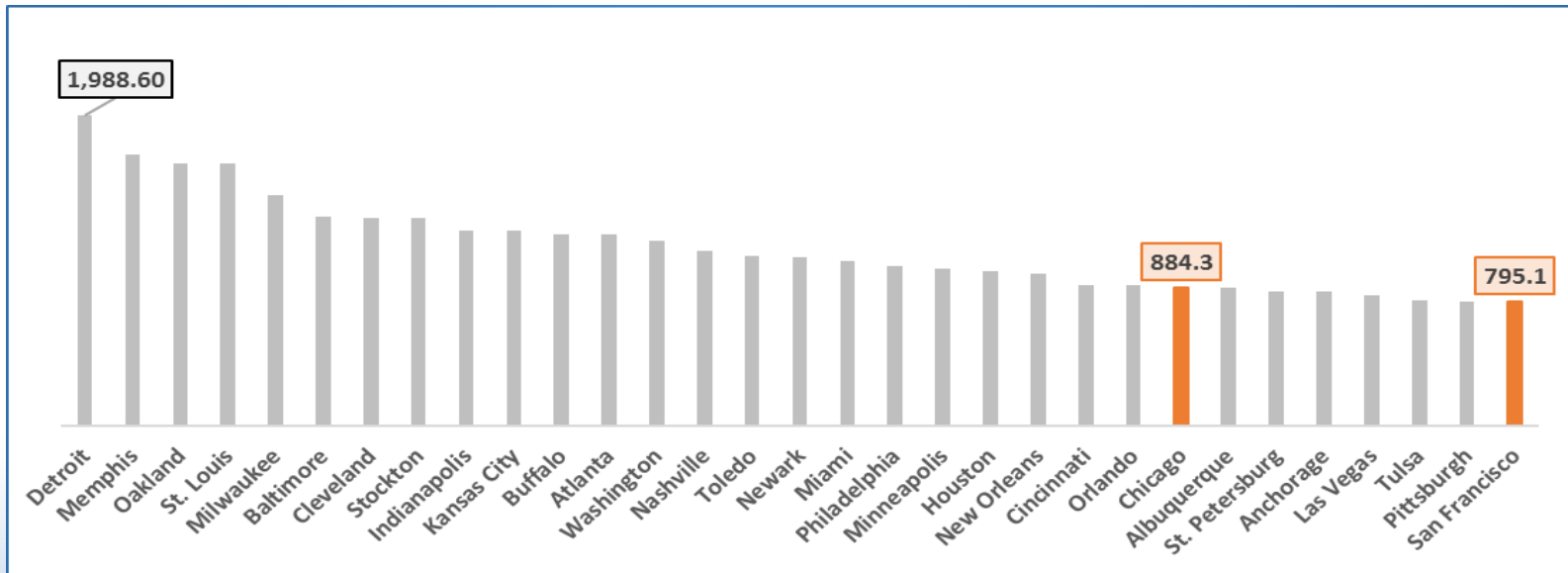
- Volume of Chicago crime data is huge, 60M records.
- Used Python for Exploratory Data Analysis and Data preparation.
- Normalized the data by removing the redundant columns and redundant Categories
- Used Tableau for Time Series, maps, charts
- Used Python matplotlib for Heat map
- Used Watson for Visualizing text. Due to 1M row limitation in Watson, taken the violent category of crimes for 8 years (2007-2015)

Chicago and San Francisco VS other US cities

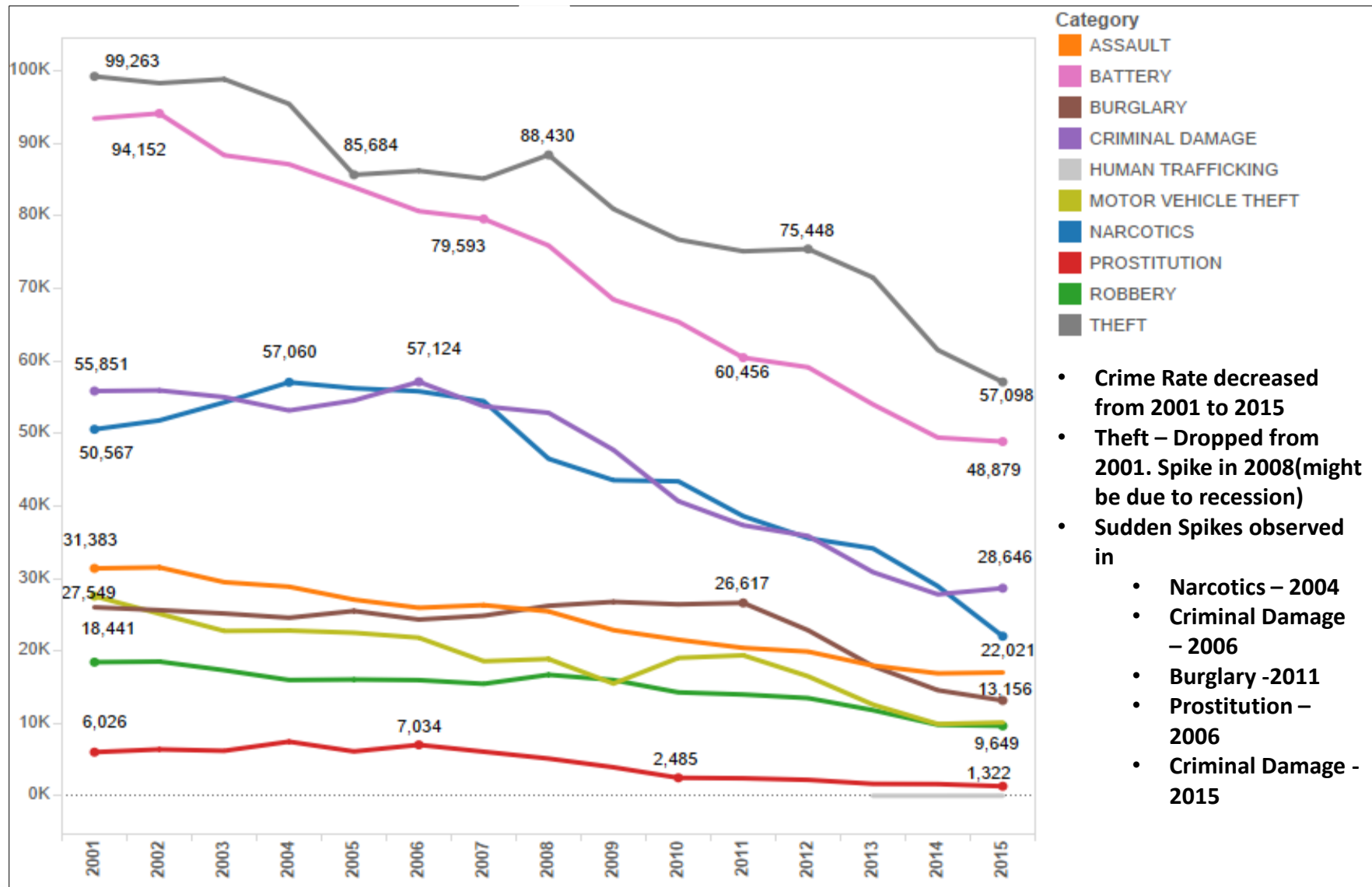
Population: Chicago - 3rd . San Francisco – 16th



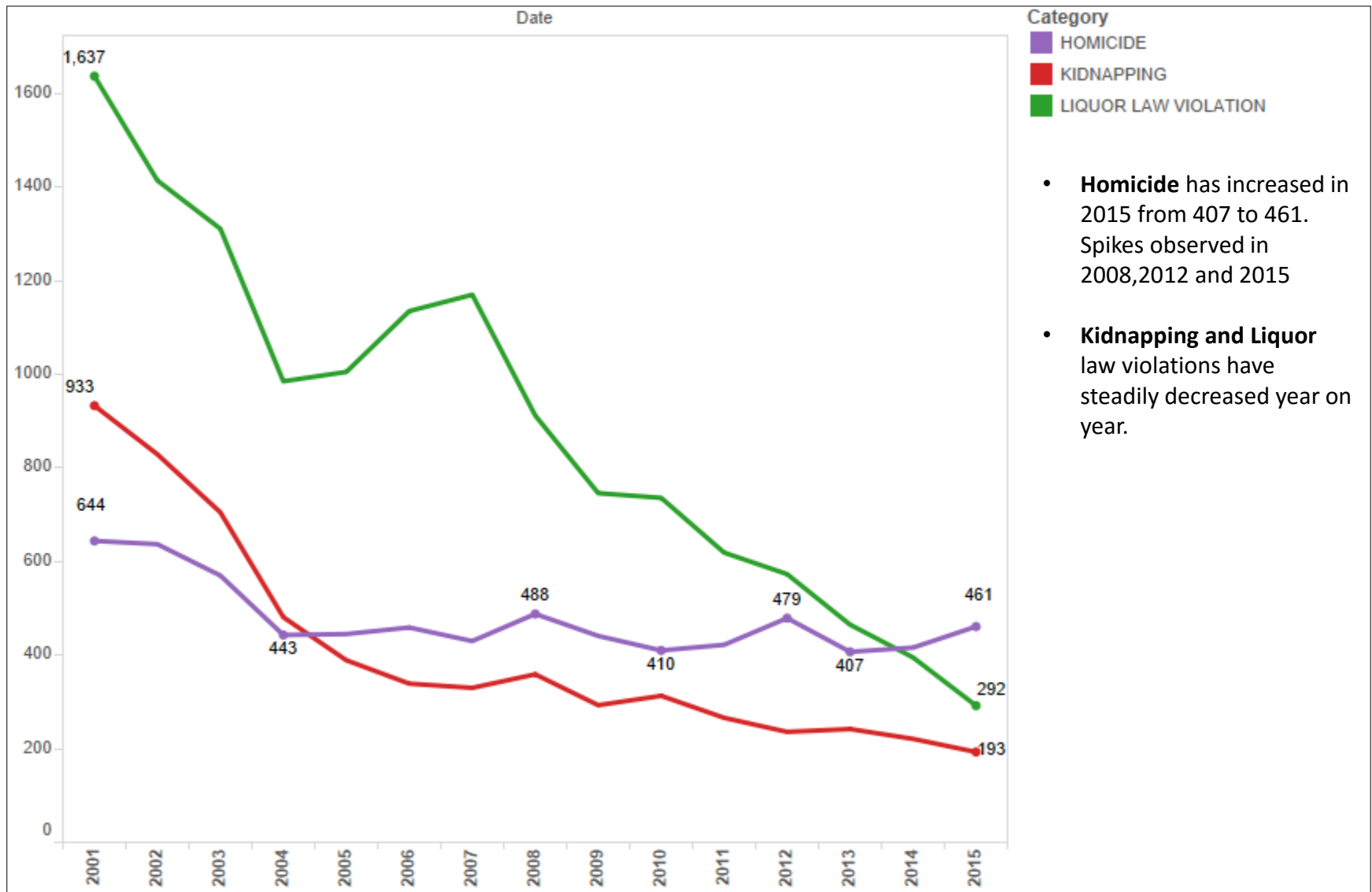
Violent Crimes: Chicago – 24th . San Francisco – 31st



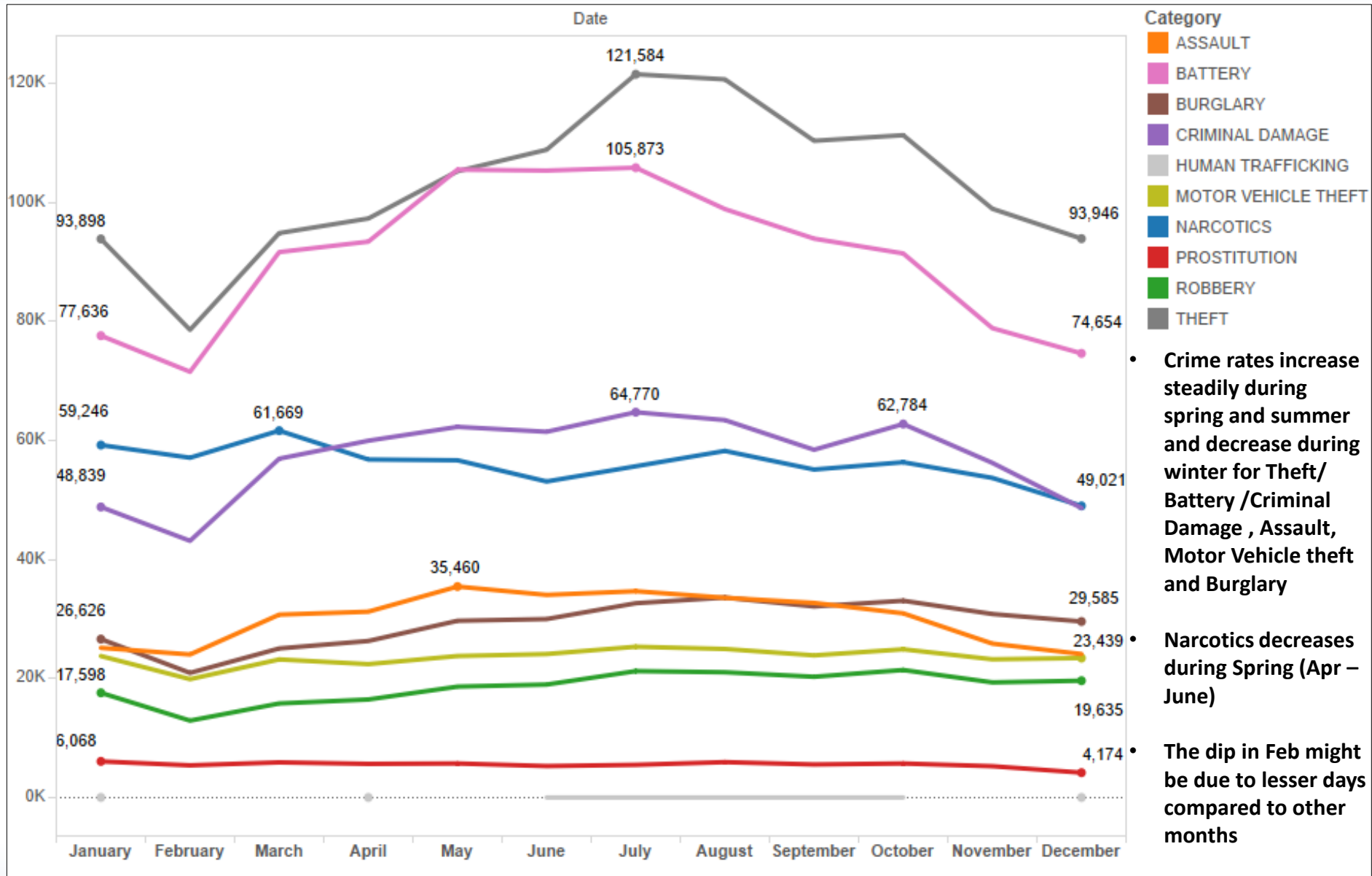
Yearly Trend of Chicago Crimes (2001 – 2015)



Yearly Trends in Chicago – Contd



Monthly Trend of Chicago Crimes



Chicago Crime intensity during every hour of day

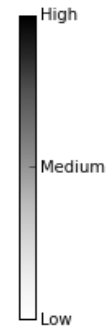
Distribution of crimes per category depending on time of day in Chicago



High Crime Rate during

- DayTime - Assault, Burglary, Kidnapping

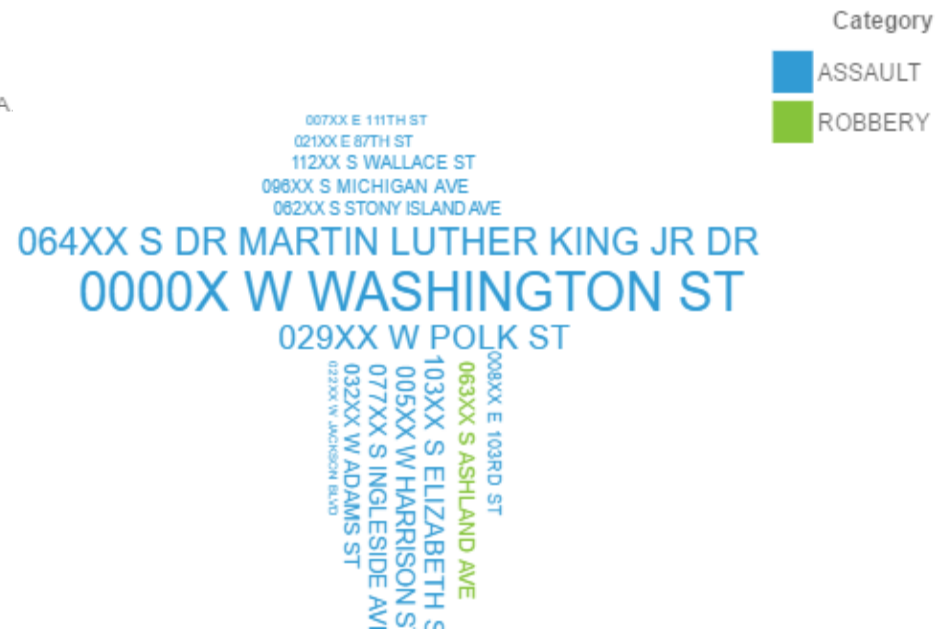
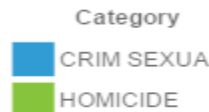
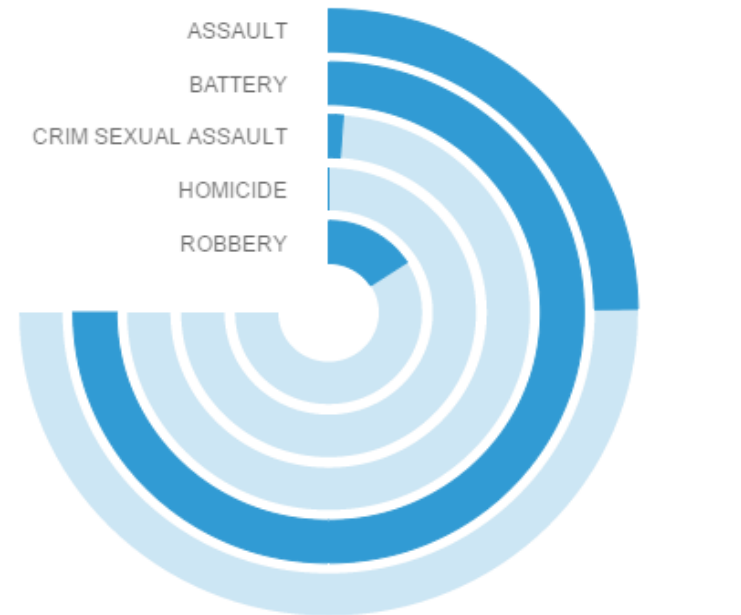
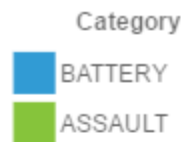
- NightTime – Arson, Homicide, Prostitution, Human Trafficking, Robbery, Motor Vehicle theft, Weapons violation



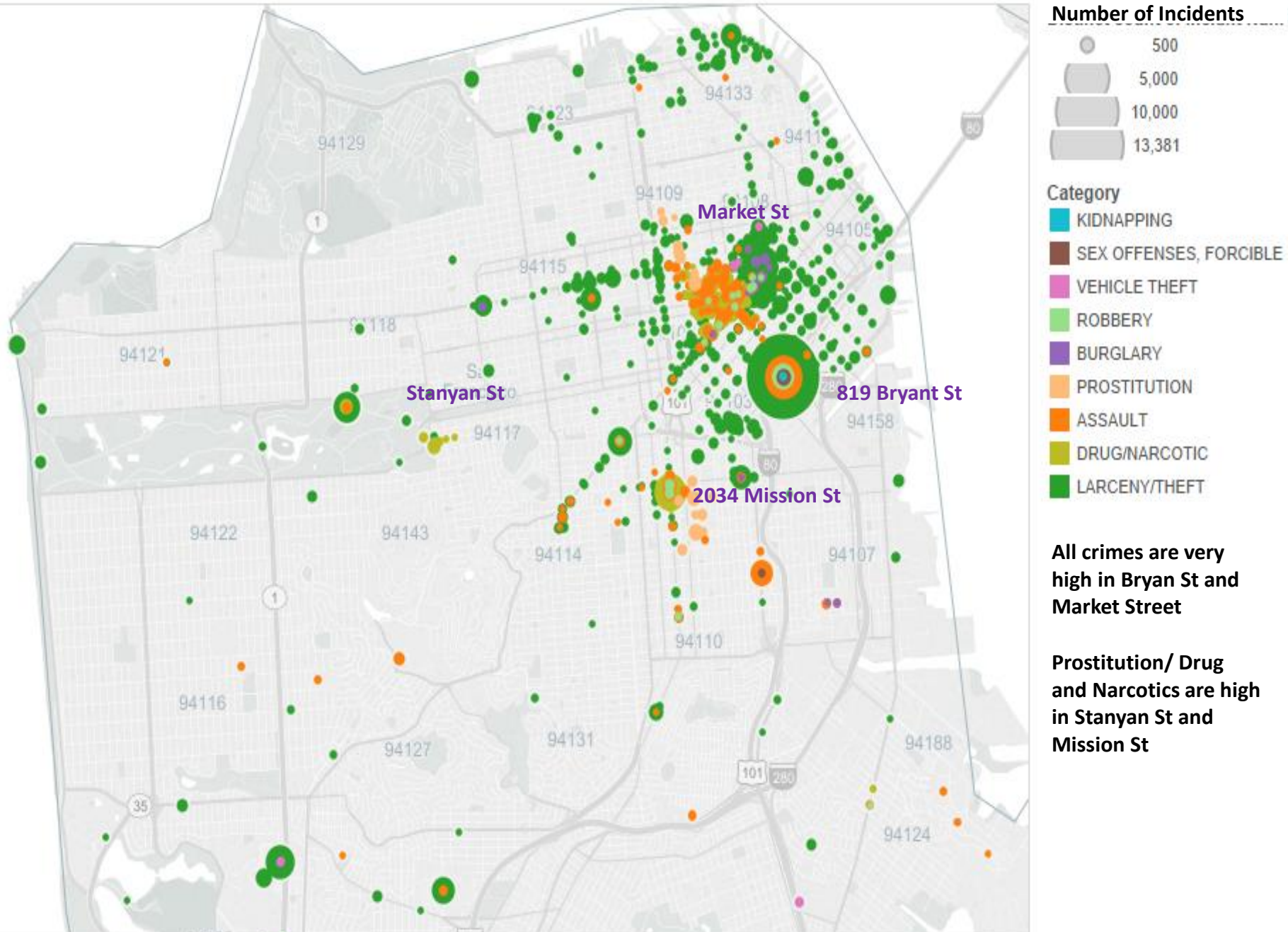
- Evening Time – Narcotics and Gambling

- Crime Rate is lowest from 1 AM till 7 AM

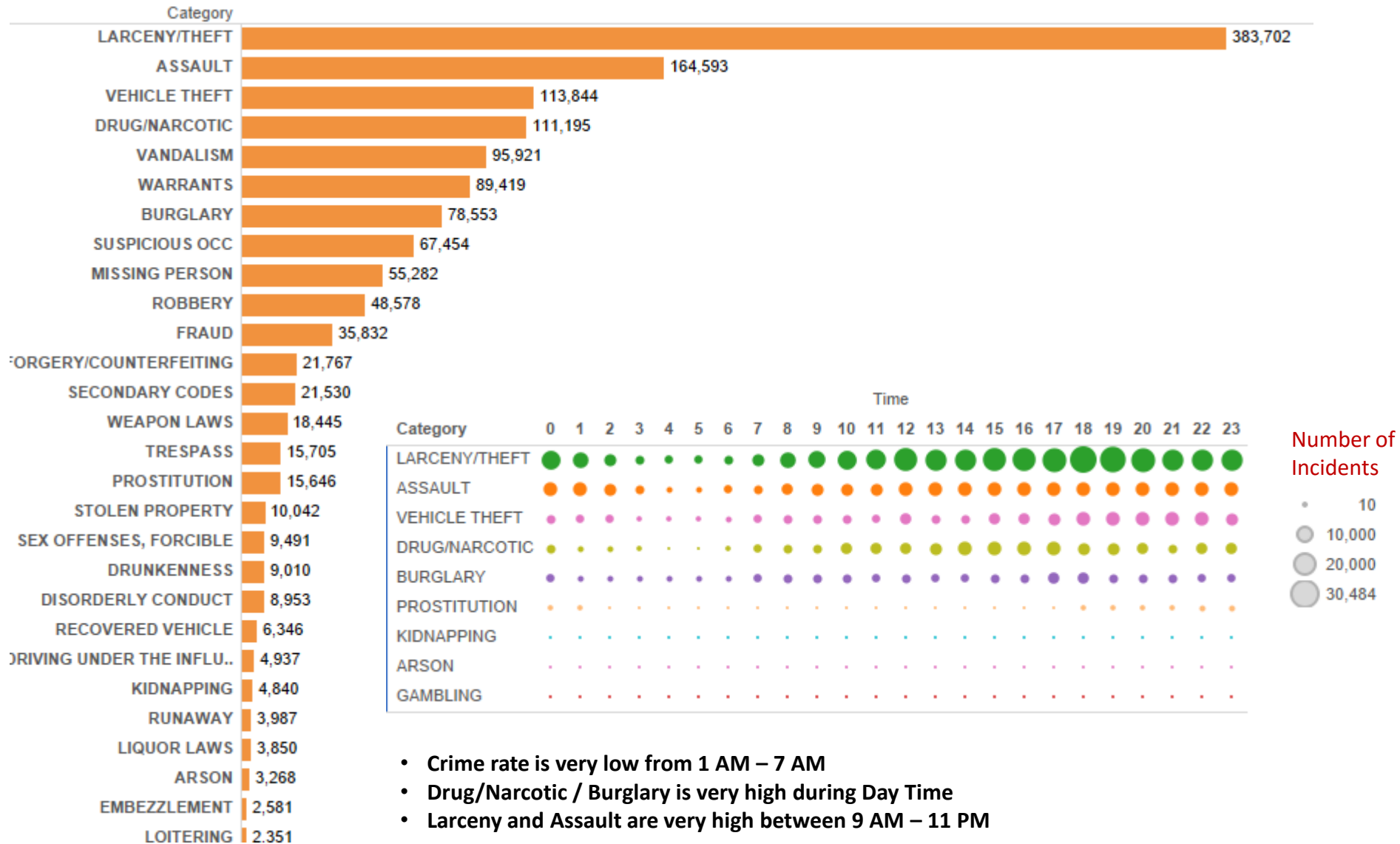
High “Violent” Crime Streets in Chicago



High Crime Streets in San Francisco



San Francisco crime intensity during every hour of day



Executive Summary

Chicago:

- Though Chicago is top 3rd in population, it ranks 24th in Violent Crime rate.
- Overall Crimes are steadily decreasing year on year from 2001 till 2015.
- However Homicide has shown ups and downs and increased in 2015
- Sudden Spikes observed in Categories below
 - Narcotics – 2004
 - Criminal Damage – 2006
 - Burglary -2011
 - Prostitution – 2006
 - Criminal Damage – 2015
- Crime rates increase steadily during spring / summer and decrease during winter for Theft/ Battery /Criminal Damage , Assault, Motor Vehicle theft and Burglary
- Narcotics decreases during Spring (Apr – June)

San Francisco

- Though San Francisco is 16th in population, it is 31st in Violent Crime rate.
- All crimes are very high in Bryan St and Market Street
- Prostitution/ Drug and Narcotics are high in Stanyan St and Mission St
- Crime rate is very low from 1 AM – 7 AM
- Drug/Narcotic / Burglary is very high during Day Time
- Larceny and Assault are very high between 9 AM – 11 PM