

NYC Crime Rates

In-depth review of NYC crime rates from 2010-2022

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Overview

We analyzed NYC crime data from 2010-2022 to uncover patterns in crime distributions across its Burroughs highlighting its connection to victims, suspects, crime types, and trends overtime.

<https://github.com/pjpeters13/project1.git>

Planning & Data Preparation

Initial data overview
8.5m rows
and **35** columns



Identified data set from NYPD open data

Retrieved data using the NYPD Open Data API and created a clean main dataset



Reviewed data dictionary to understand the data and select columns for project



Created sub-datasets from main dataset to answer each of our questions



Goals

Goal 1

What are the present crime rates in NYC, and what are the expected crime rates for the upcoming years?

Goal 2

Review how crime rates correlate with the time of year.

Goal 3

Explore the crime statistics for each borough and the various types of crimes reported.

Goal 4

What are the crime rates for each day of the week, and which crime occurs most frequently on each day?

Goal 5

Which crimes are observed across different age groups?

Goal 6

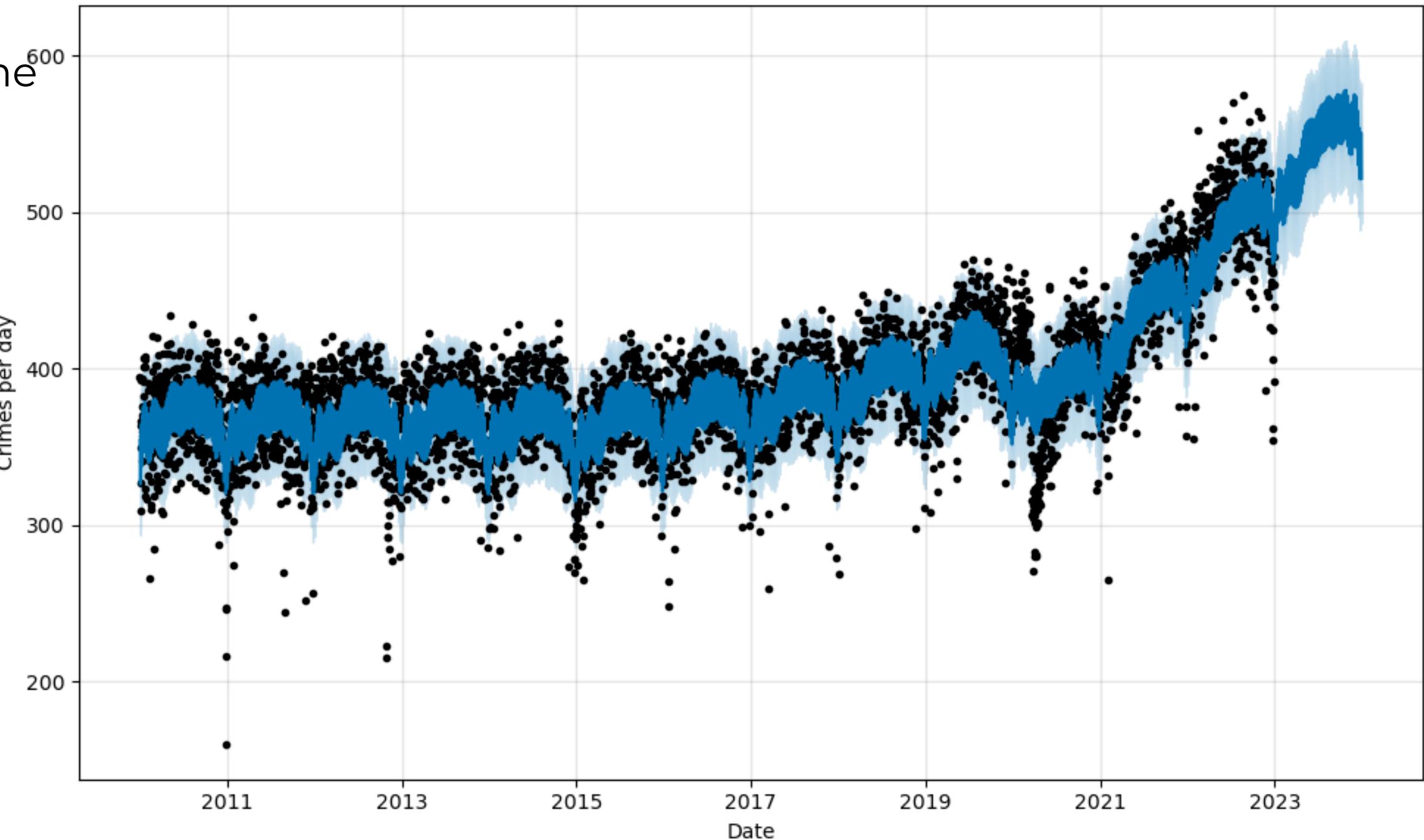
How do crime patterns change from year to year?

Goal 1

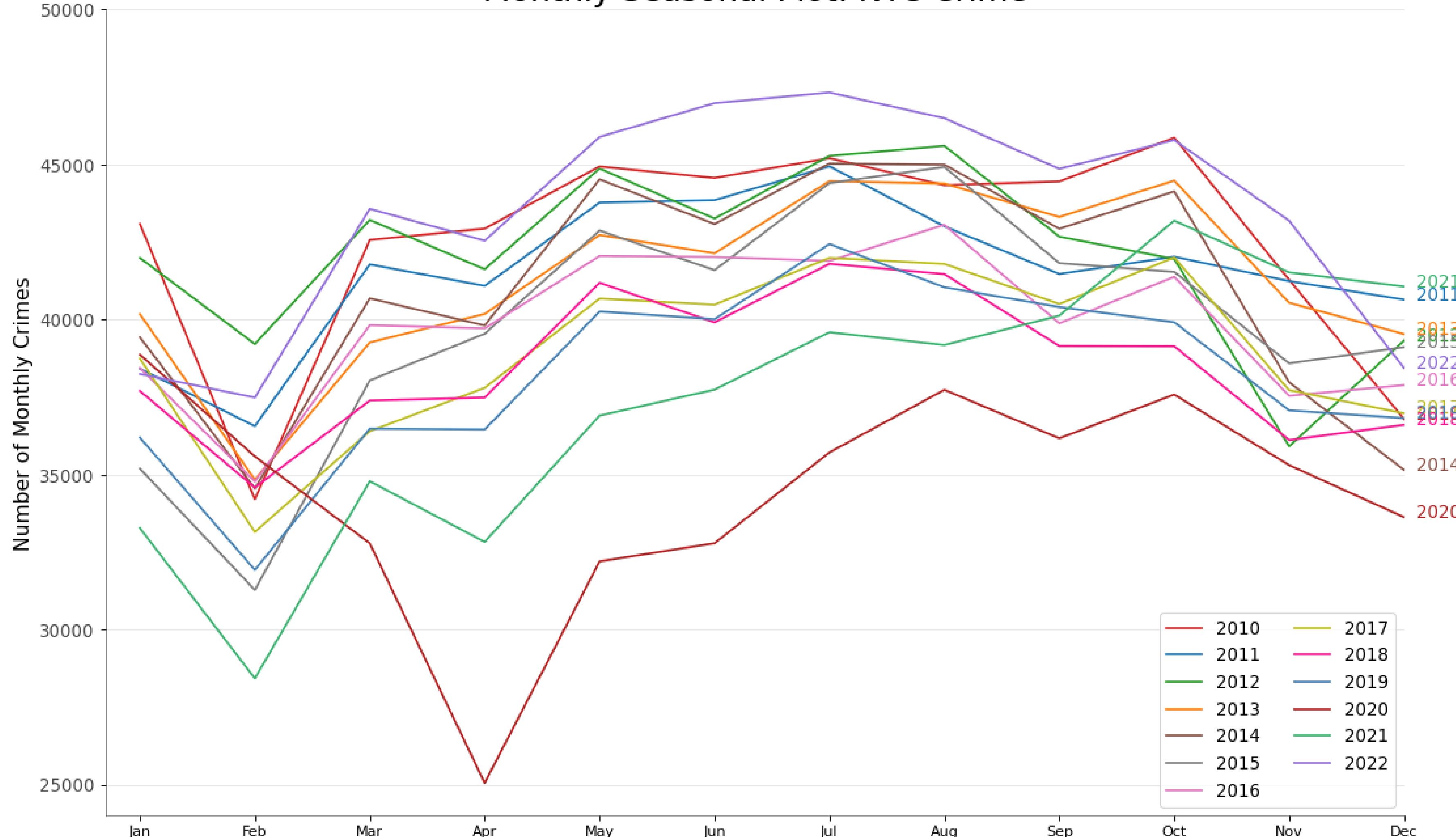
What are the present crime rates in NYC, and what are the expected crime rates for the upcoming years?

Findings

- Crime Rates are at an all-time-high and are projected to continue climbing (2023 data not yet released)



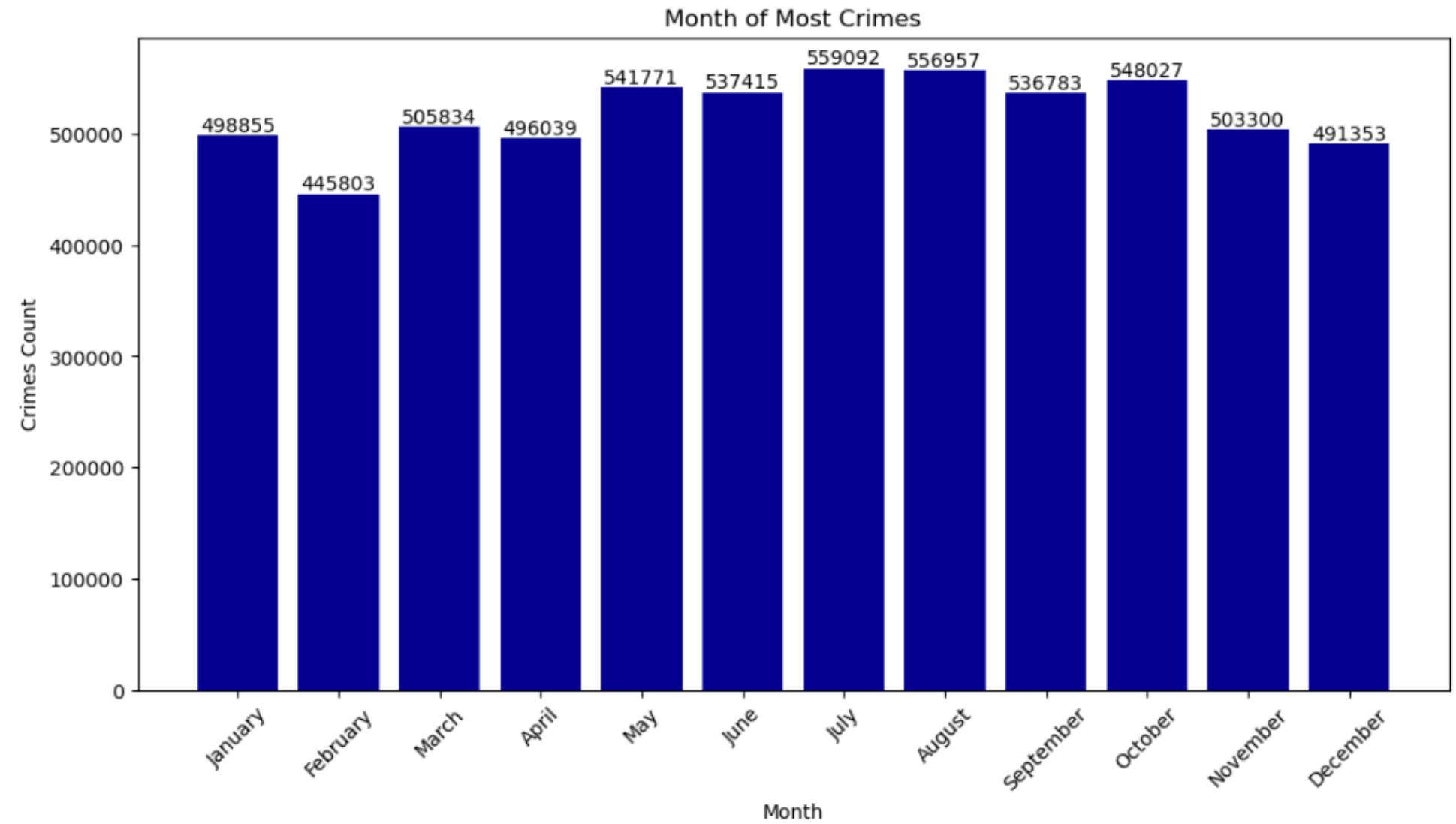
Monthly Seasonal Plot: NYC Crime



Goal 2

Review how crime rates correlate with the time of year.

Findings



- Over the course of time in our analysis July just edges August as the most crimes by month.
- The New York City Police Department (NYPD) maintains comprehensive crime-related statistics, which serve as a management tool to reduce crime, improve procedures and training, and offer transparency to the public and government oversight agencies. Since its implementation in 1994, CompStat has significantly contributed to driving down crime rates in NYC to levels not seen since the 1950s

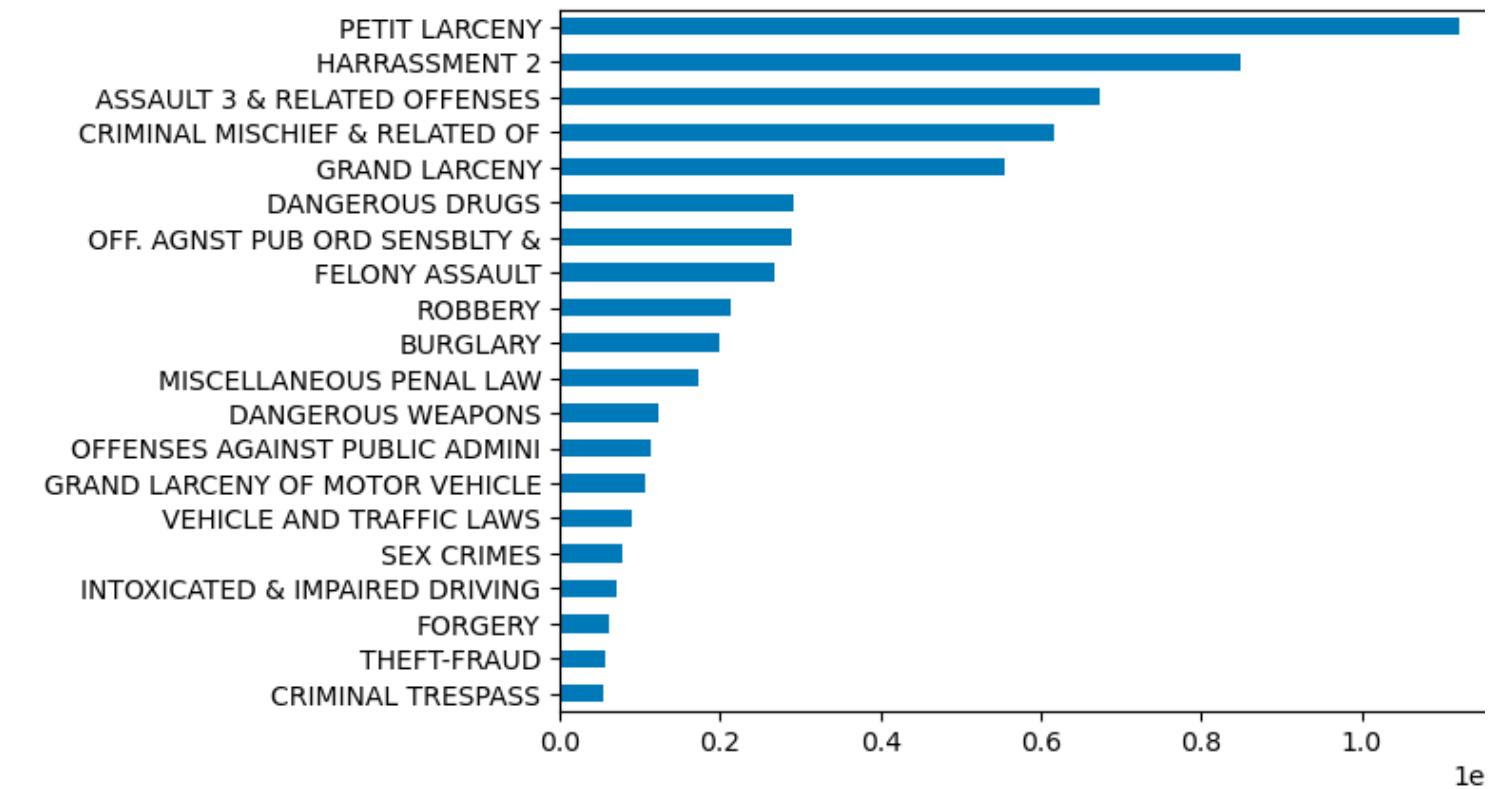
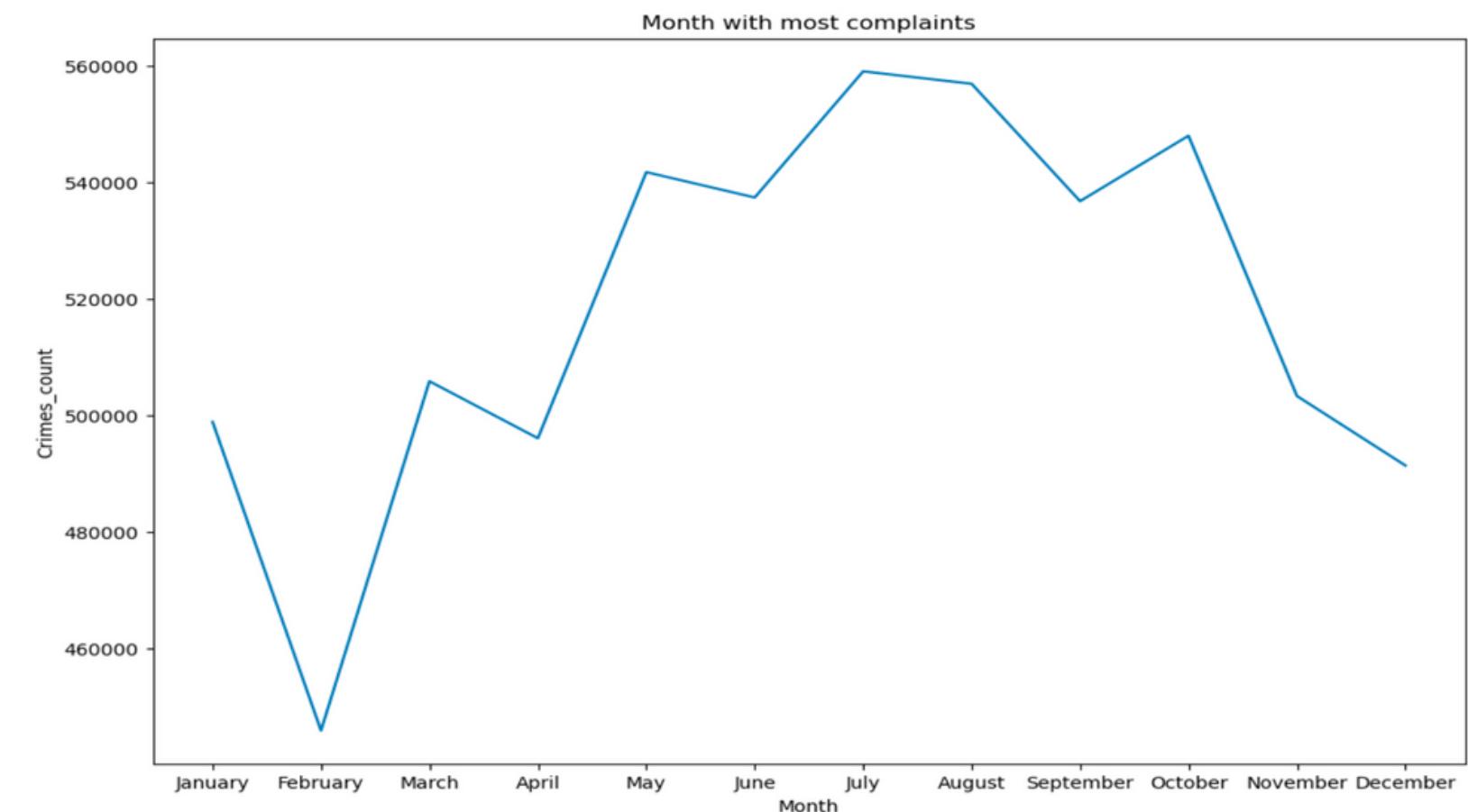
Stats courtesy:[New York Crime Stats](#)

Goal 2

Review how crime rates correlate with the time of year.

Findings

- Crimes seem to rise over seasons, Winter months are lower than summer Months over our 12-year study.
- Petty Larceny, Harassment, assault are the most crimes committed over our 12-year study

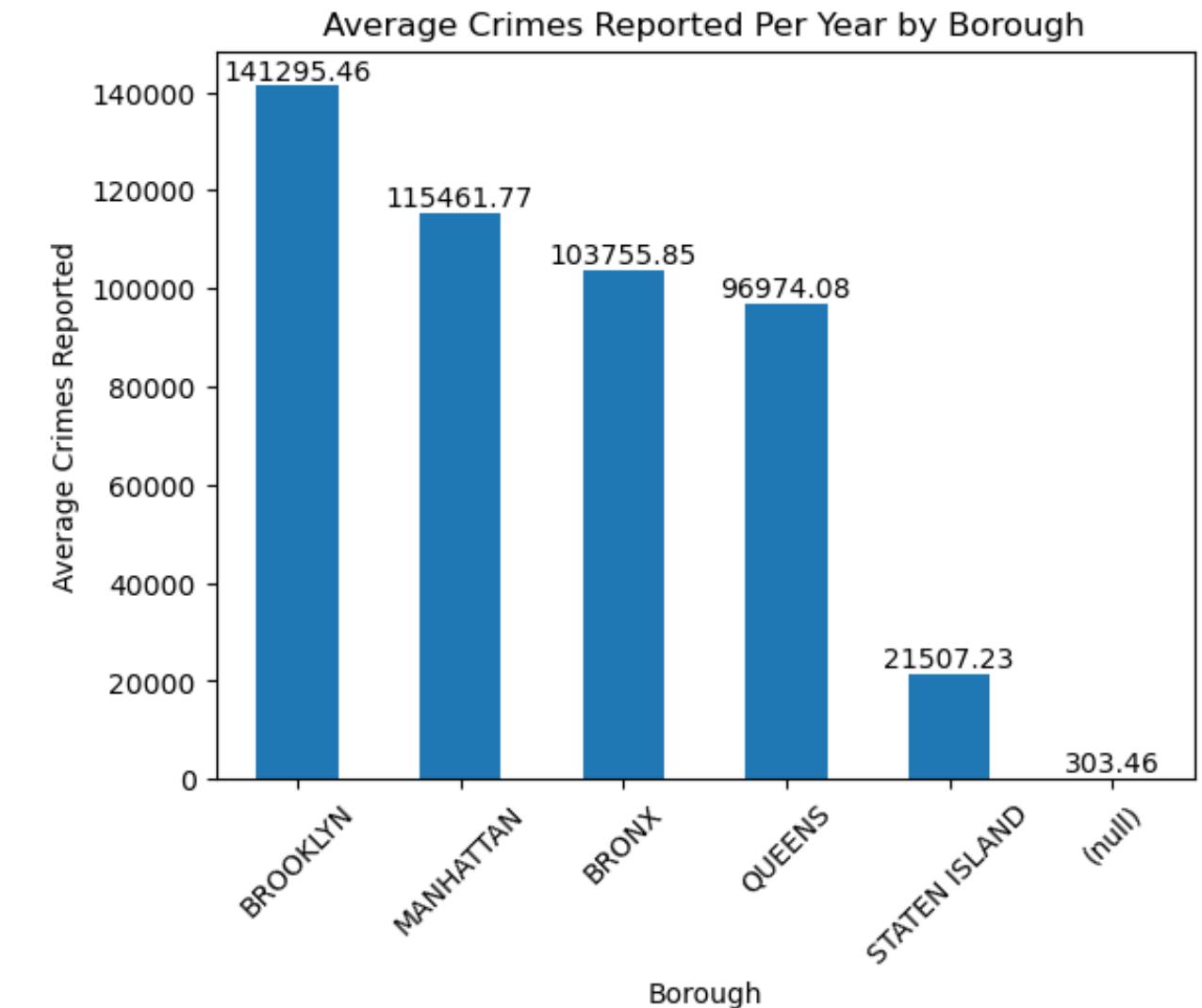
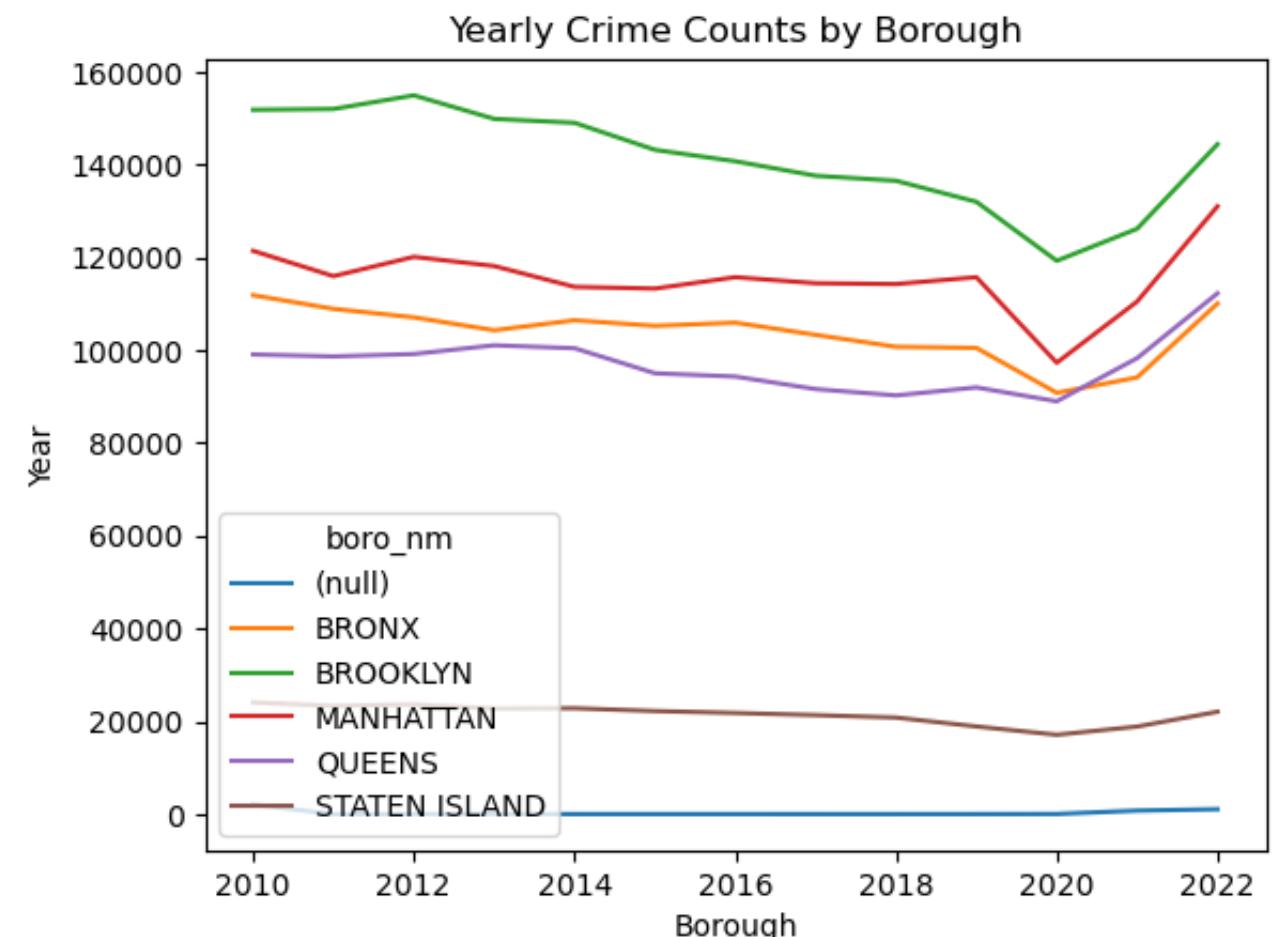


Goal 3

Explore the crime statistics for each borough and the various types of crimes reported.

Findings

- All boroughs remained flat with from 2010 - 2015 when a steady decrease was seen until 2020
- Brooklyn sees more crime year over year than any of the other boroughs

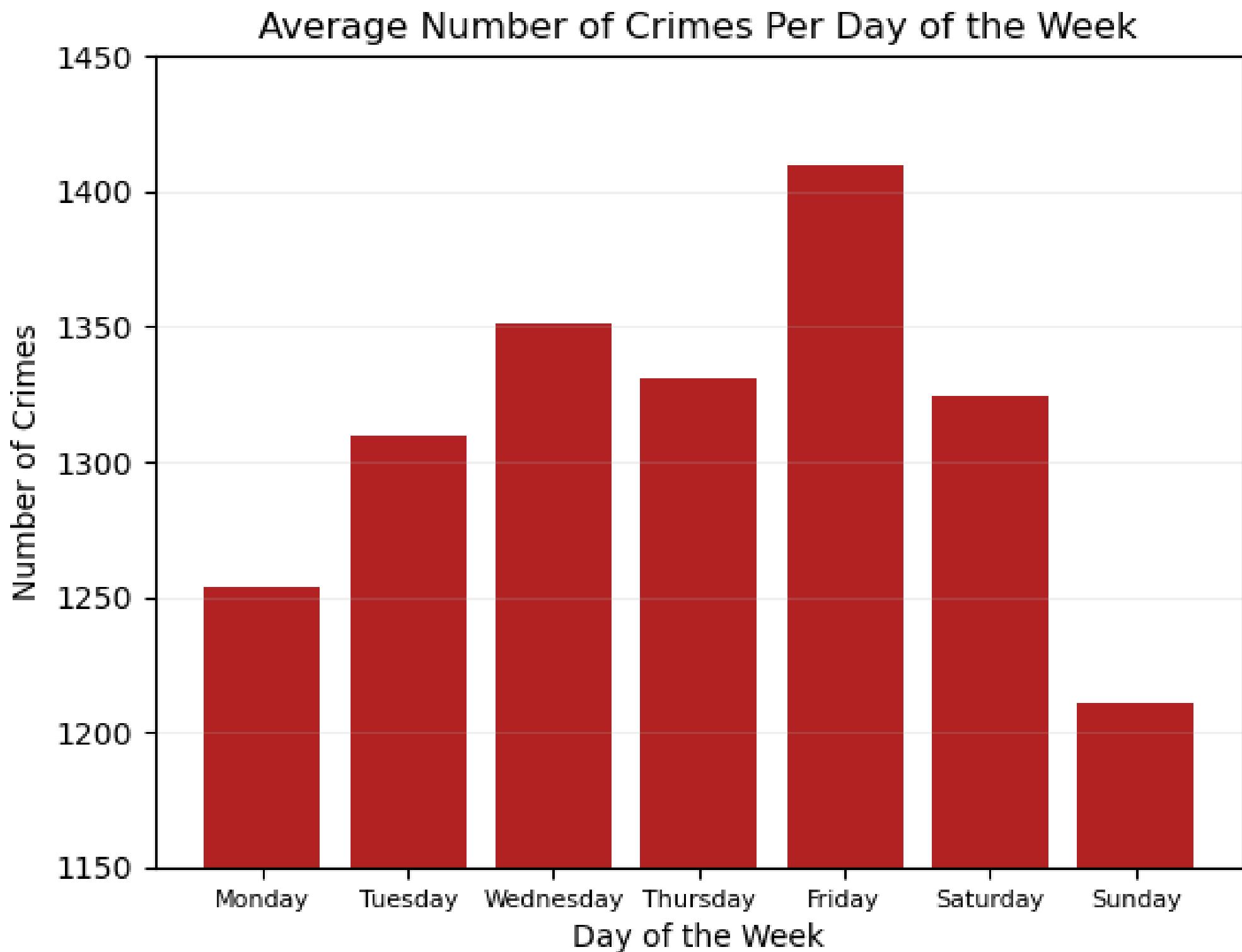


Goal 4

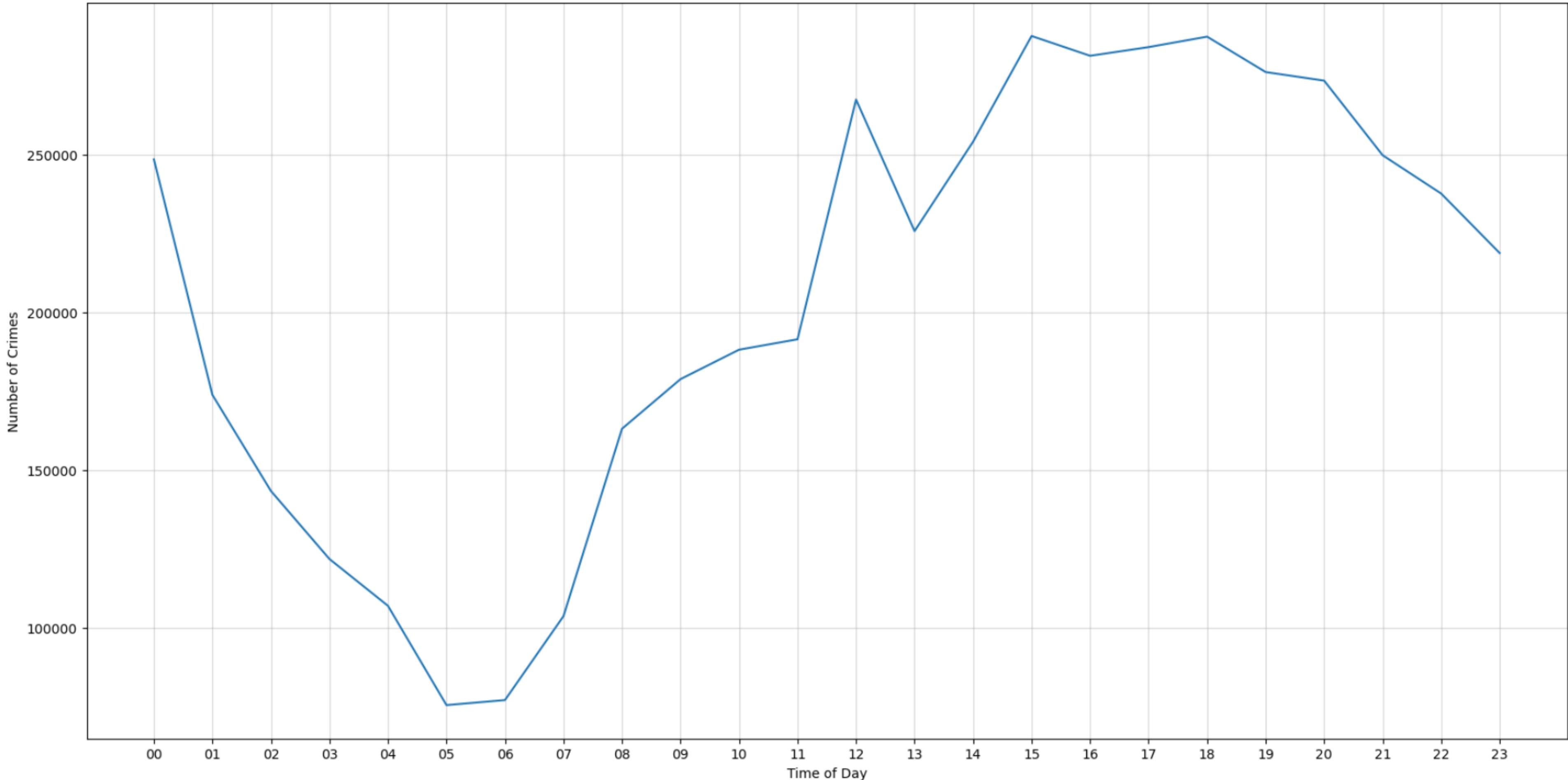
What are the crime rates for each day of the week, and which crime occurs most frequently on each day?

Findings:

Petty Larceny - Every Day...



Number of Crimes Based on the Time of Day

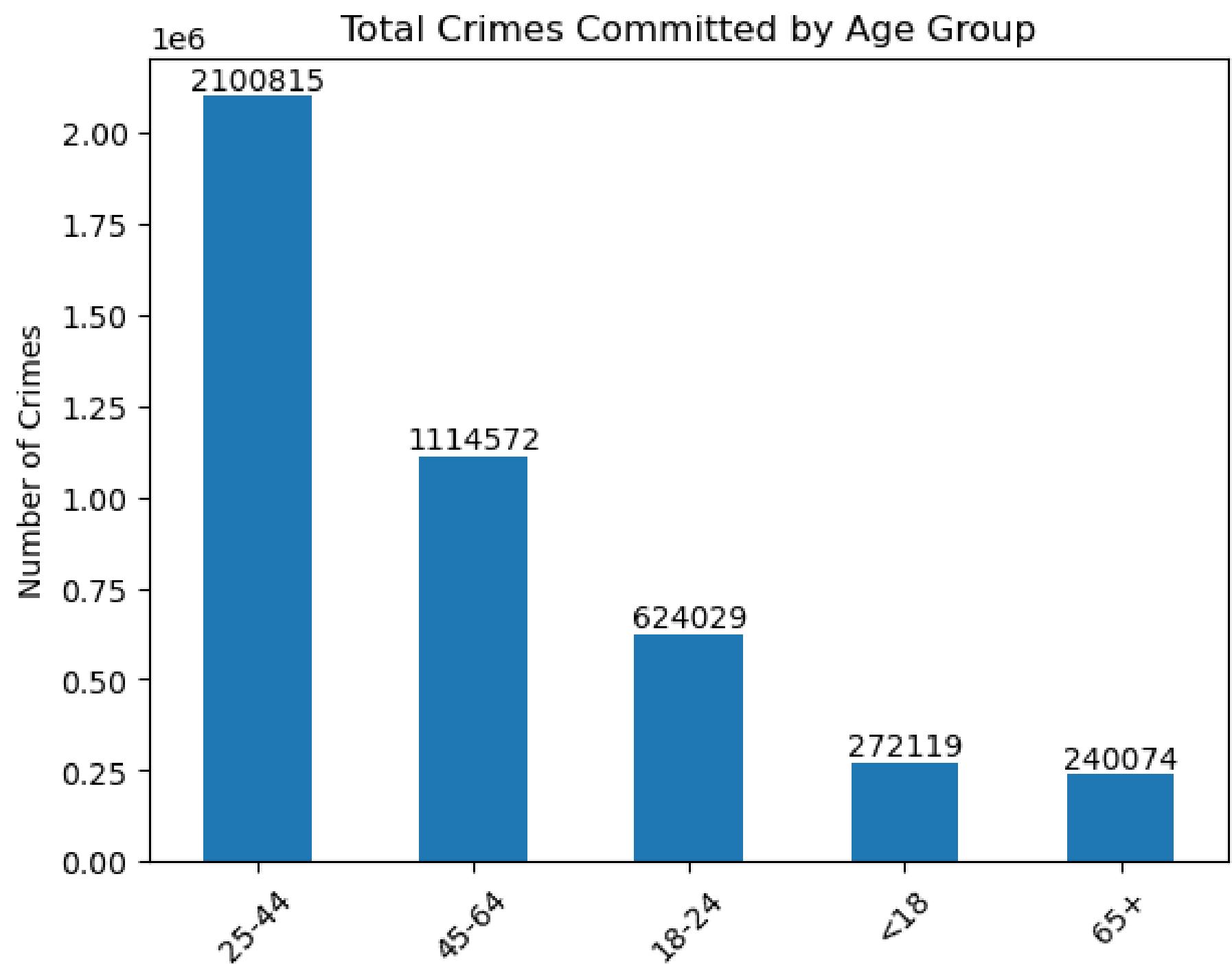


Goal 5

Which crimes are observed across different age groups?

Findings

- More crimes have been committed toward victims that fall in the 25-44 age group than any other group
- The age group for suspects was minimally tracked and did not provide enough data for age analysis



Goal 5

What are the top 5 crimes reported by each victim age group

Findings

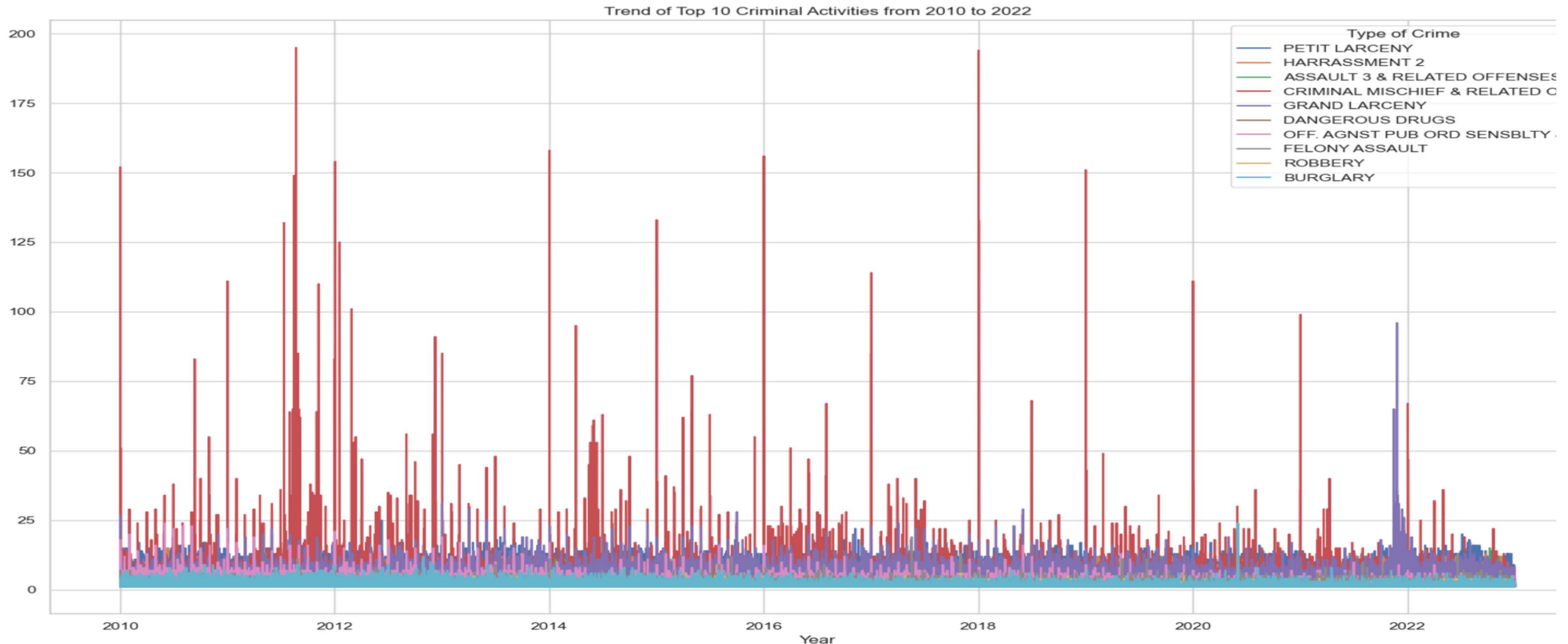
Top offense for victims

- <18: Assault 3 & Related Offenses
- 18-24: Assault 3 & Related Offenses
- 25-44: Harassment 2
- 45-64: Harassment 2
- 65+: Harassment 2

vic_age_group	ofns_desc	
18-24	ASSAULT 3 & RELATED OFFENSES	129452
	HARRASSMENT 2	96499
	PETIT LARCENY	80675
	GRAND LARCENY	68436
	FELONY ASSAULT	47829
25-44	HARRASSMENT 2	379994
	PETIT LARCENY	321001
	ASSAULT 3 & RELATED OFFENSES	312972
	GRAND LARCENY	220503
	CRIMINAL MISCHIEF & RELATED OF	183198
45-64	HARRASSMENT 2	234794
	PETIT LARCENY	176329
	ASSAULT 3 & RELATED OFFENSES	132134
	CRIMINAL MISCHIEF & RELATED OF	129279
	GRAND LARCENY	117905
65+	HARRASSMENT 2	45419
	GRAND LARCENY	42261
	PETIT LARCENY	40740
	CRIMINAL MISCHIEF & RELATED OF	28486
	FELONY ASSAULT	14737
<18	ASSAULT 3 & RELATED OFFENSES	62275
	HARRASSMENT 2	52410
	SEX CRIMES	37633
	ROBBERY	28306
	FELONY ASSAULT	22936

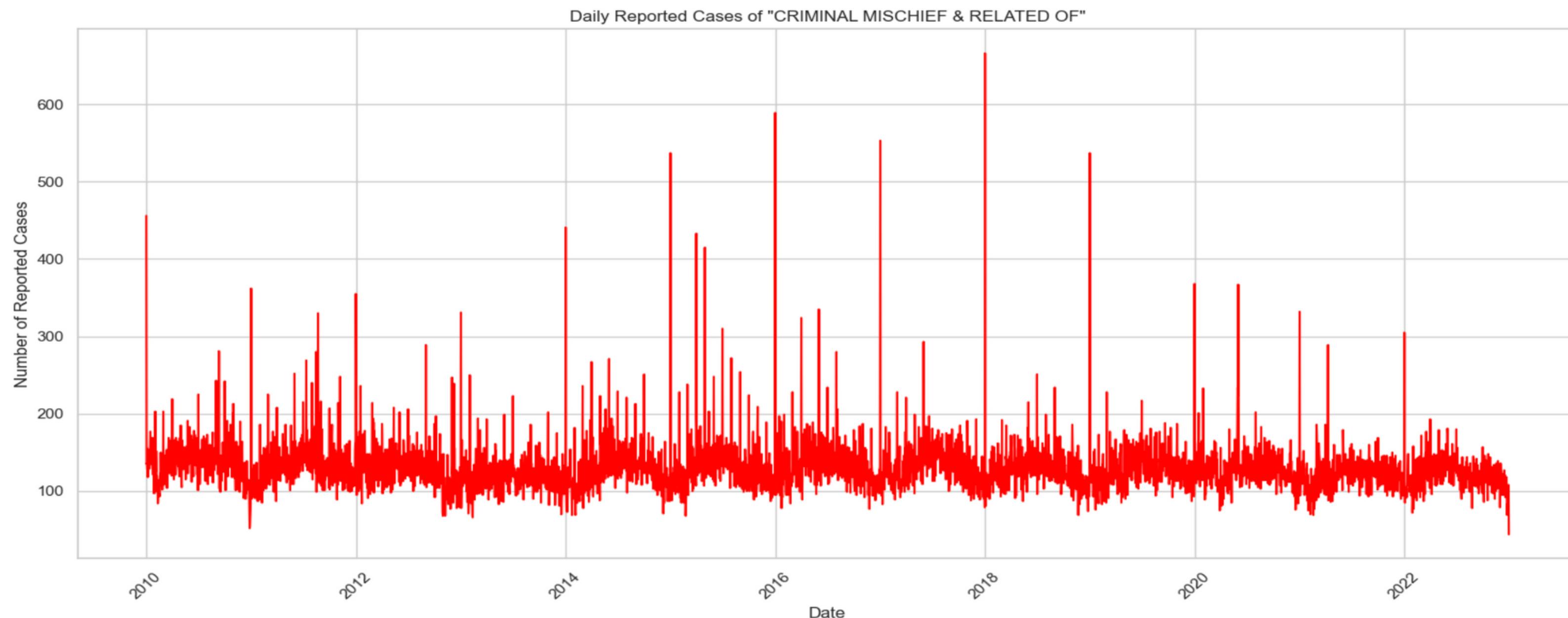
Goal 6

Periodicity in Peaks of 'CRIMINAL MISCHIEF & RELATED OFFENSES' Cases



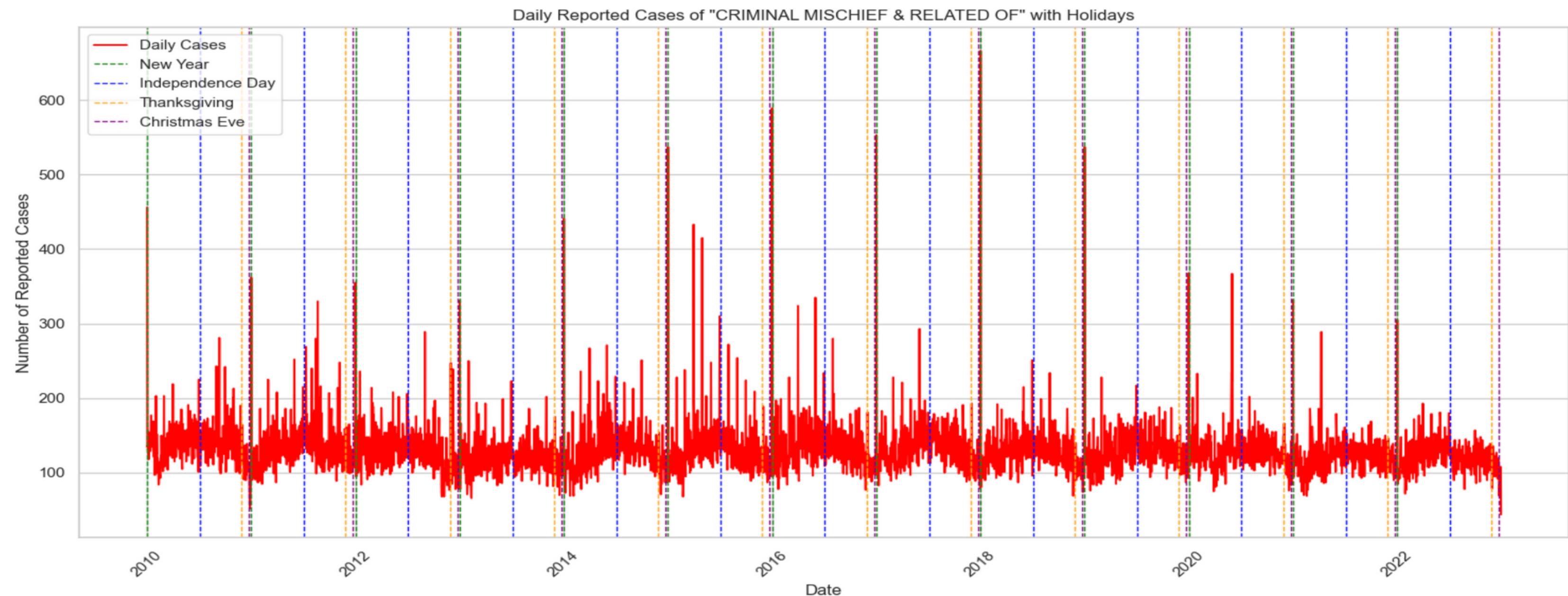
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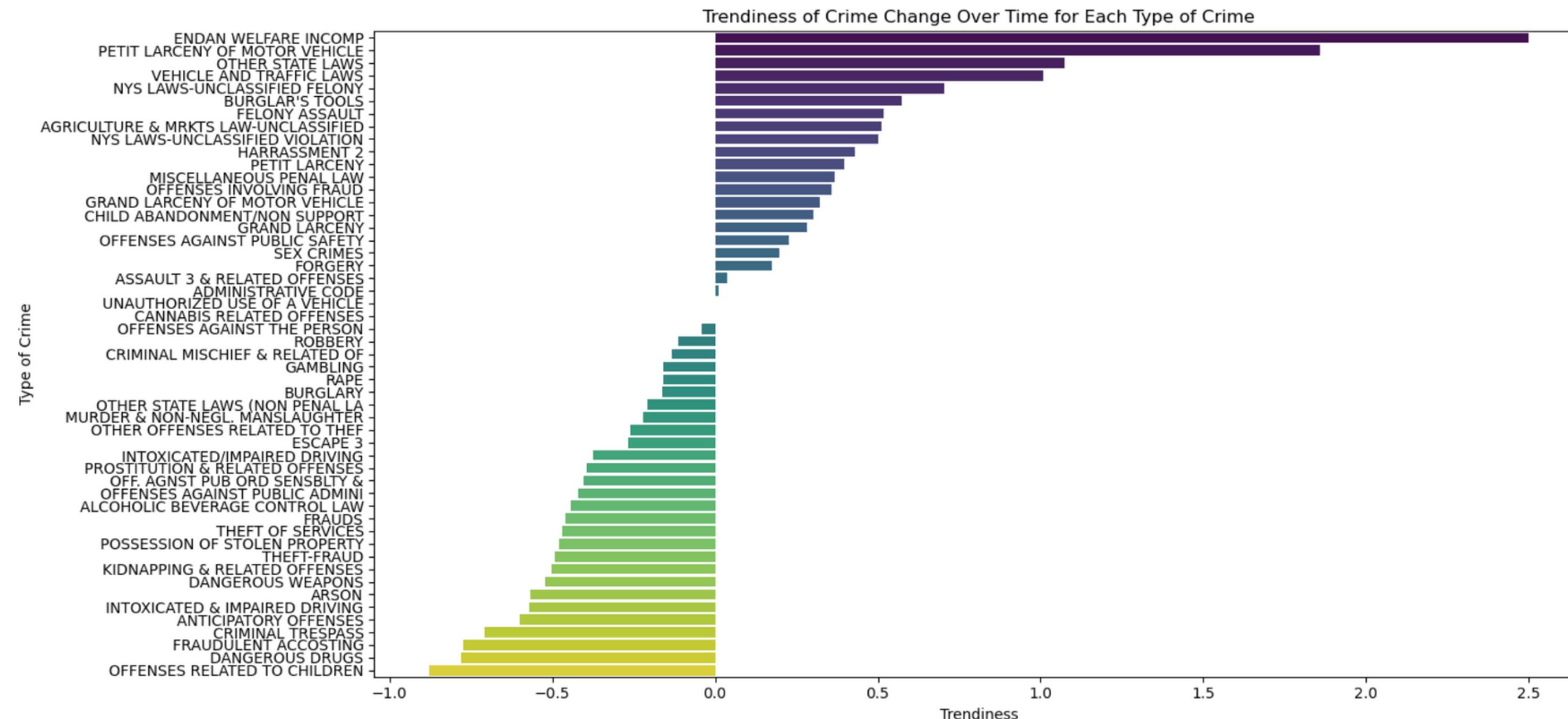
Goal 6

Periodicity in Peaks of 'CRIMINAL MISCHIEF & RELATED OF' Cases with Holidays



Goal 6

How do crime patterns change from year to year?

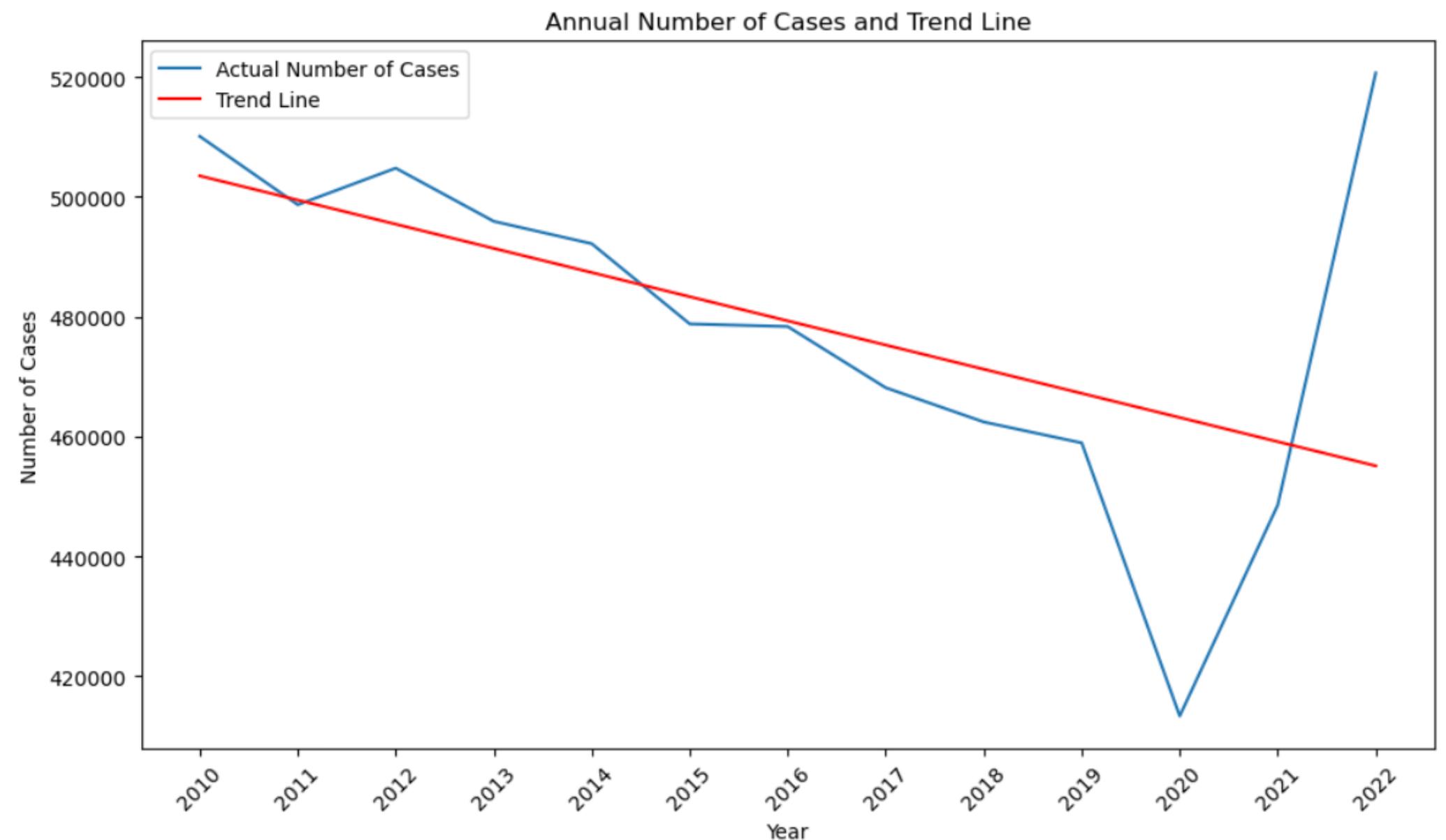


Goal 6

How do crime patterns change from year to year?

Findings

- The negative slope indicates a general decrease in the number of cases annually
- 2020 saw a major dip with Covid and a spike way above the trend line post-Covid
- Key Statistics
 - Slope: -4034.587912087913
 - Intercept: 8613026.769230772
 - P-value: 0.058167038167714145
 - R-squared: 0.2889100172682514



Summary

- Our project analyzes NYC crime data from 2010 to 2022, uncovering patterns across boroughs and time.
- Through sequential data gathering, cleaning, and analysis, we provide actionable insights for enhancing public safety efforts.



Problems Encountered

GitHub

Working with GitHub as a group posed challenges for us with losing work and not merging properly

File Size

Size of files and data from APIs caused timing issues for us

Reporting Spikes

Inconsistencies on timing of reported crimes

Future Considerations

- Explore the potential for predictive modeling to forecast future crime trends in NYC based on historical data patterns.
- Consider incorporating additional data sources such as demographic information, community engagement initiatives, and environmental factors to enhance the comprehensiveness of crime analysis and prediction models.

Questions?

