COVID-19 Impact on LA Crime Rates

Vaishnavi Jahagirdar, Gayatri Kharche, Darren Lee, Wenyi Zhang, Michael Aquilina

Motivation

The recent COVID-19 pandemic has significantly altered various aspects of life, including social distancing, economic uncertainties, and shifts in daily routines. Our group decided to see how these changes would affect crime rates, particularly in the Los Angeles area.

Our aim is to learn which factors were influenced, what type of trend they are showing and potentially relate these to socioeconomic factors, racism, and policies. Additionally, we can learn how the LA community has adapted to the challenges posed by the disease and the subsequent return to normalcy post-pandemic.

Dataset

We used data from data.lacity.org, which provide open data easily accessible to the public. They store various datasets such as public safety, transportation, housing, and more.

For LA crime rate, there were many comprehensive columns for analysis, such as offense date, area committed, sex, ethnicity, weapon used, and type of crime.

Datasets Used:

- Crime data from 2010 to 2019
  - https://data.lacity.org/Public-Safety/Crime-Data-from-2010-to-2019/63jg-8b9z/about_data
- Crime data from 2020 to Present (Early 2023)
  - https://data.lacity.org/Public-Safety/Crime-Data-from-2020-to-Present/2nrs-mtv8/about_data

Methodology

1. Data Collection and Cleaning

Used Pandas and NumPy libraries to select relevant columns to analyze, add datetime format columns, handle incorrect or outlying values, and prepare data for further analysis.

2. Data Analysis

Plotted counts and percentage changes of the two datasets, in order to compare differences and similarities from the impact of COVID.

3. Data Visualization

Used Matplotlib and Seaborn for attractive and intuitive data visualization, to help come to conclusions and find potential factors that would answer our questions.
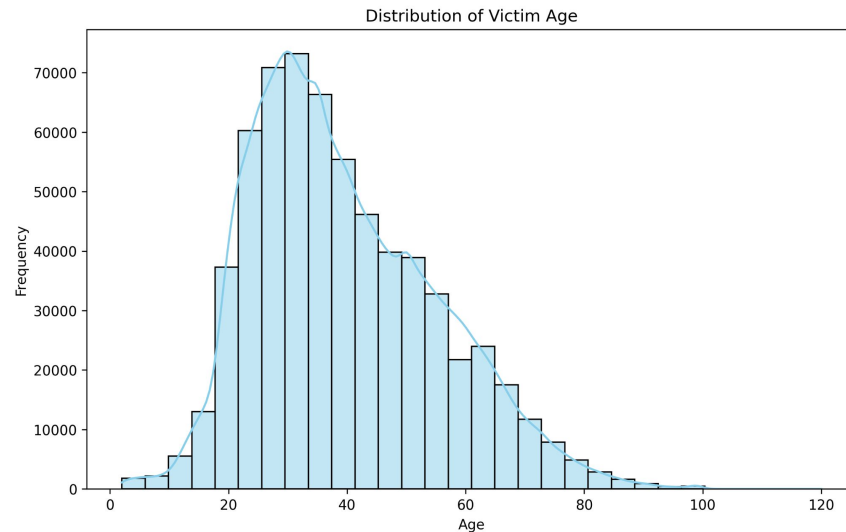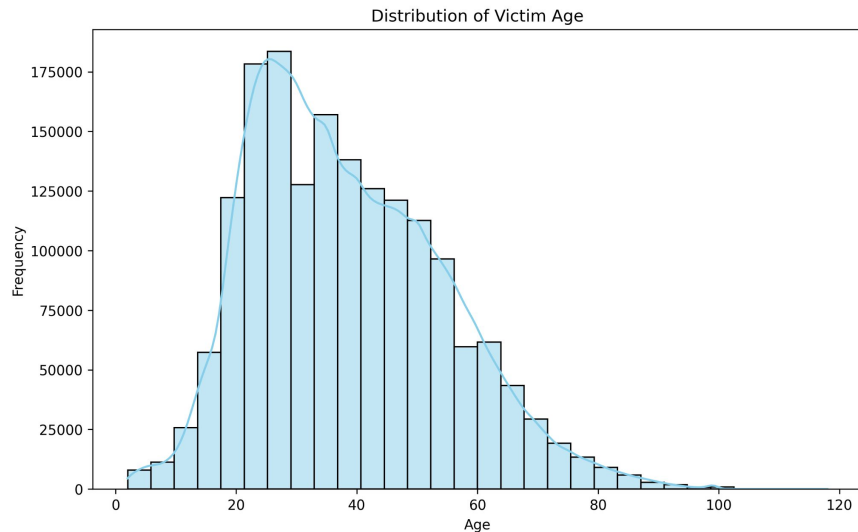
Crime Counts over the Years

- Noticeable plummet immediately following 2020

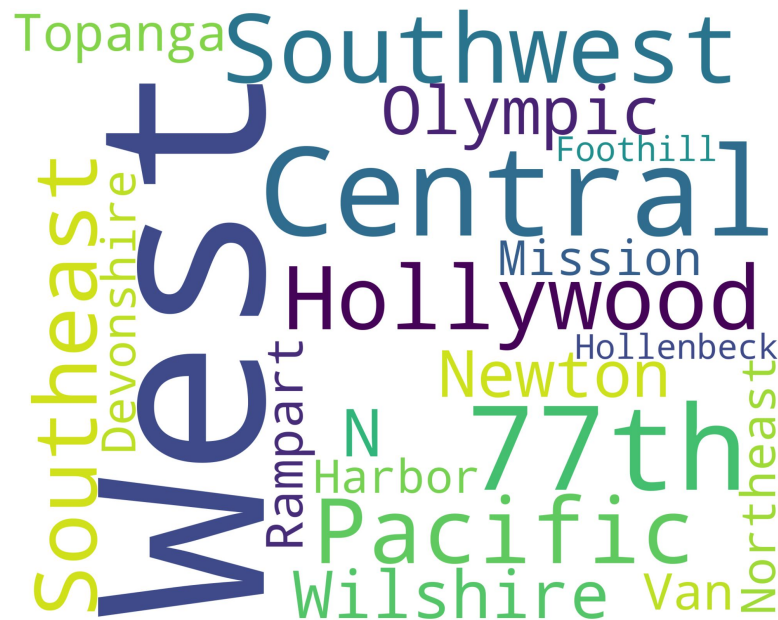- Increases to usual crime count levels prior to COVID
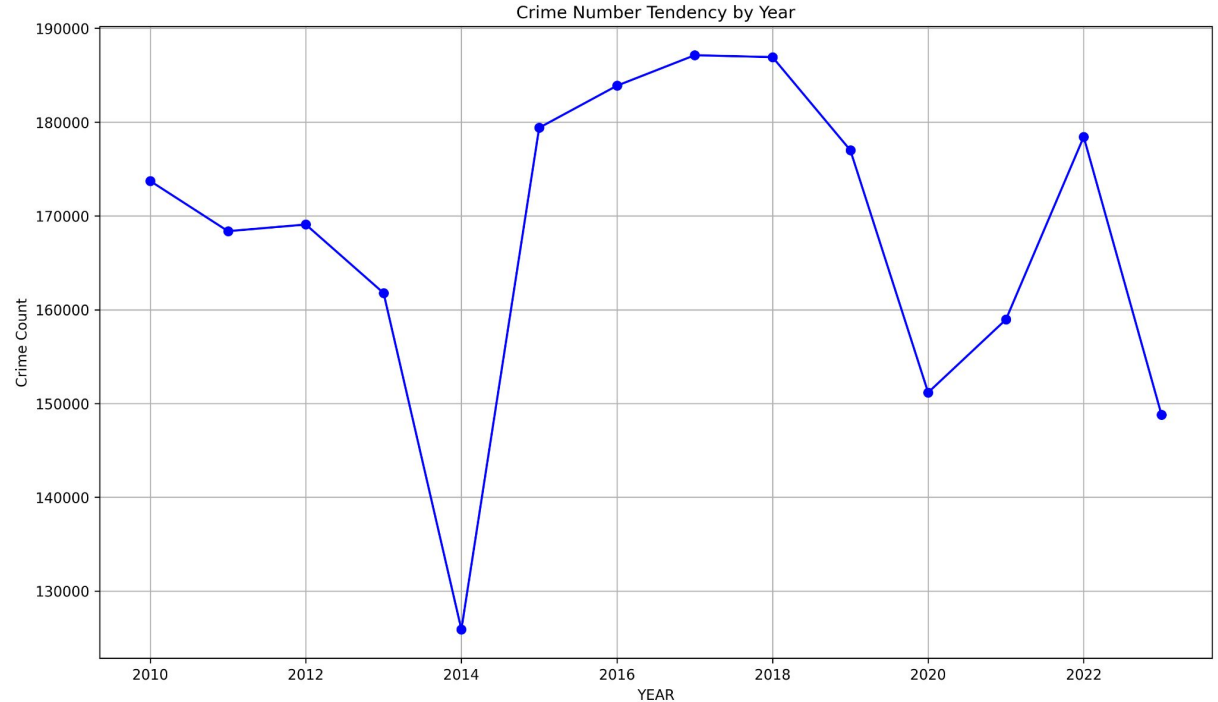
Crime Number Tendency by Year

Homicide Counts

Victim Age Distribution - before and after COVID
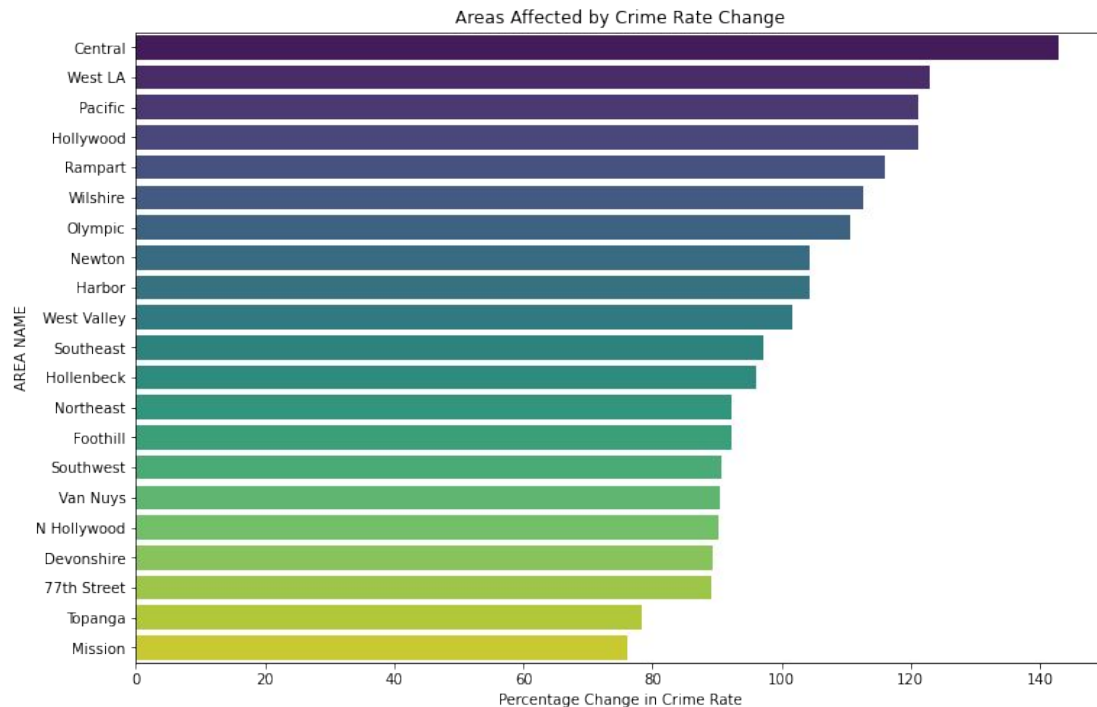

Distribution of Victim Age

- Noticeable increase in victims aged **late twenties to early thirties**

Most Crime Affected Areas - before and after
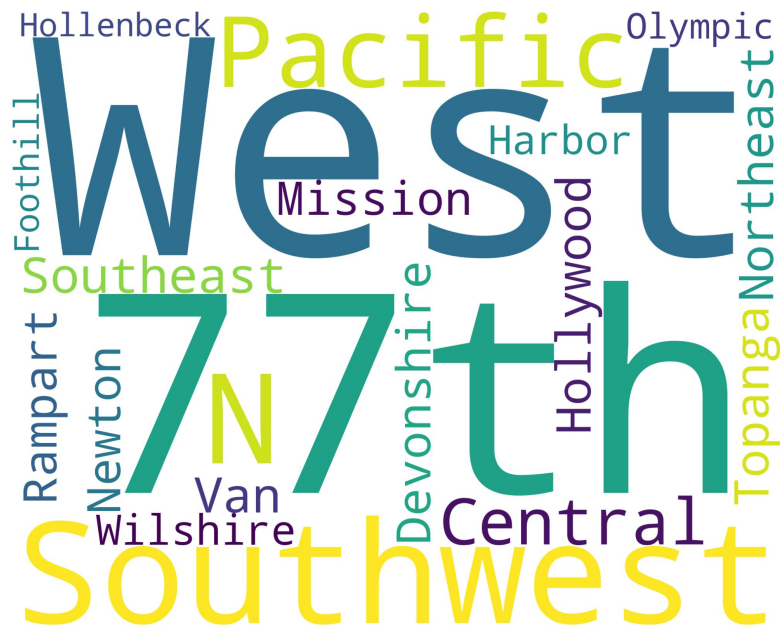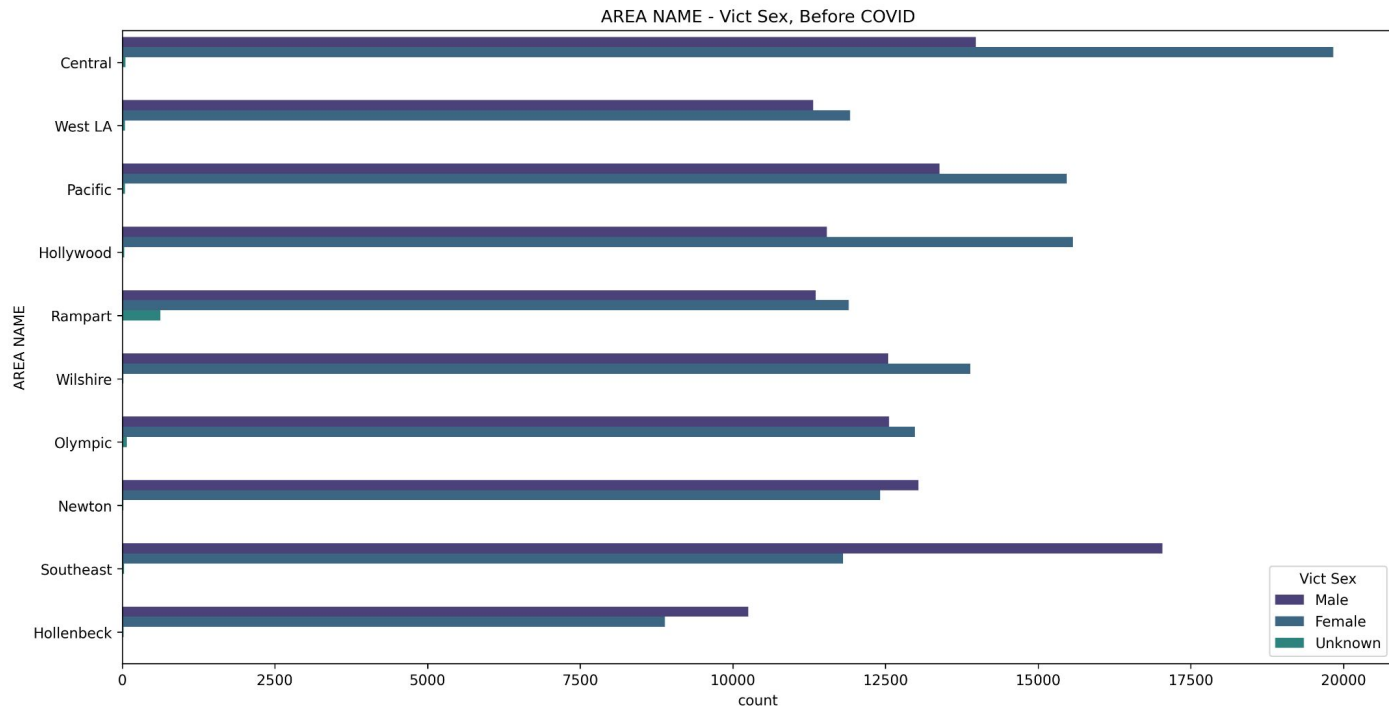
Areas Affected - Percent Change
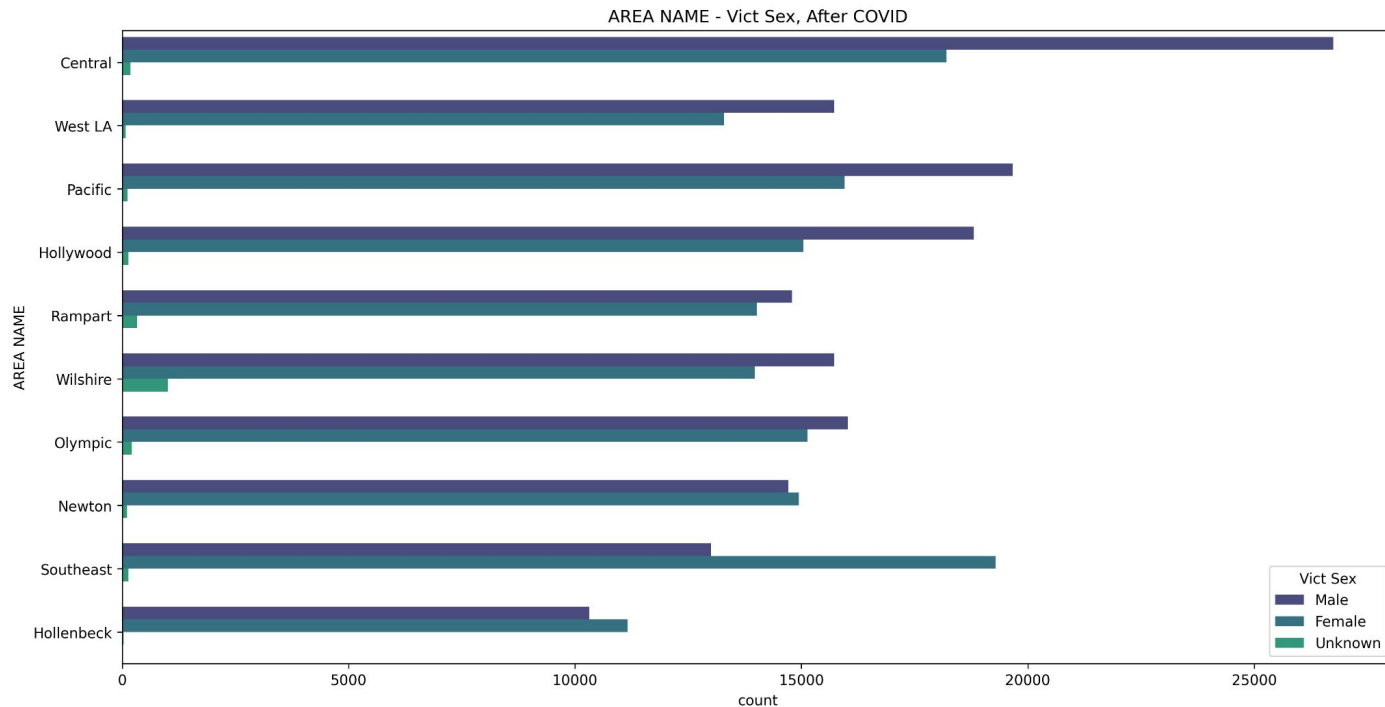

Areas Affected by Crime Rate Change

- Crime **increased** in upper half areas of the graph

- Crime **decreased** in lower half areas

Crime Affected Areas, Sex Distribution - before COVID

AREA NAME - Vict Sex, Before COVID

Crime Affected Areas, Sex Distribution - after COVID


AREA NAME - Vict Sex, After COVID

Victim Descent Distribution - before COVID

- Victim ethnicities correlate to LA ethnicity distribution

- Hispanics, whites, and blacks being the majority minorities

Victim Descent Distribution

H - Hispanic
W - White
B - Black
O - Other
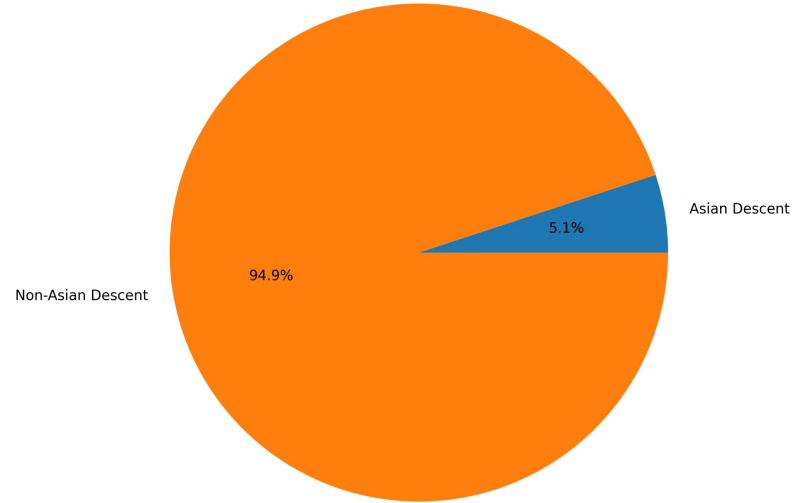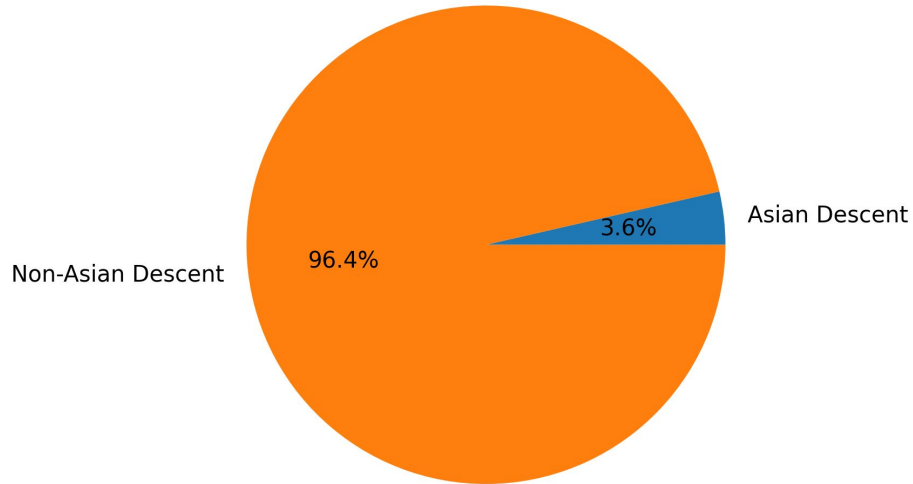A - Other Asian
X - Unknown
K - Korean
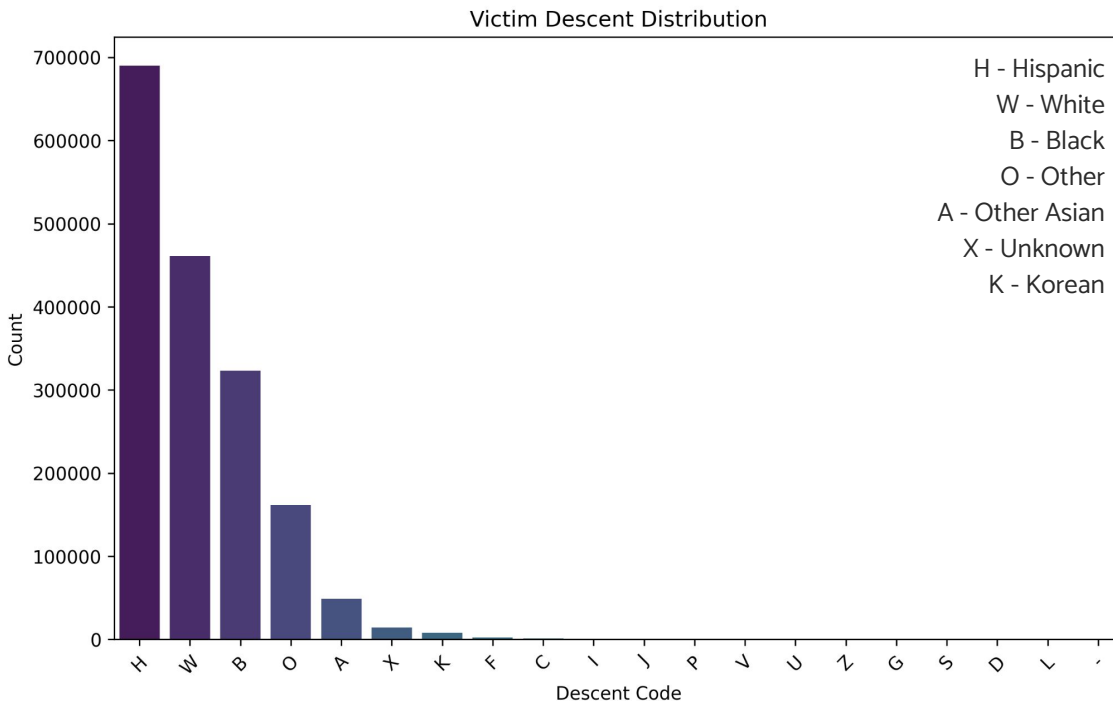
Victim Descent Distribution - after COVID

- Left-skew decrease

- Asian minorities such as Korean, Filipino, and Chinese became a victim more frequently

Victim Descent Distribution

H - Hispanic
W - White
B - Black
O - Other
A - Other Asian
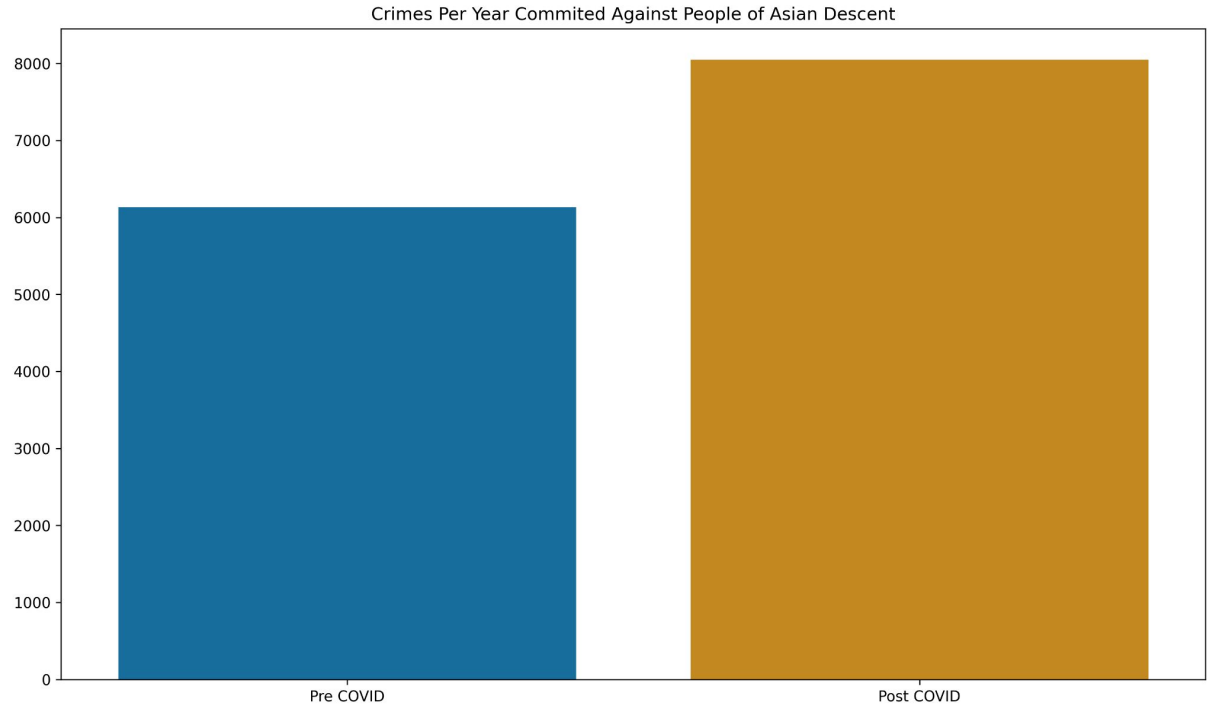X - Unknown
K - Korean
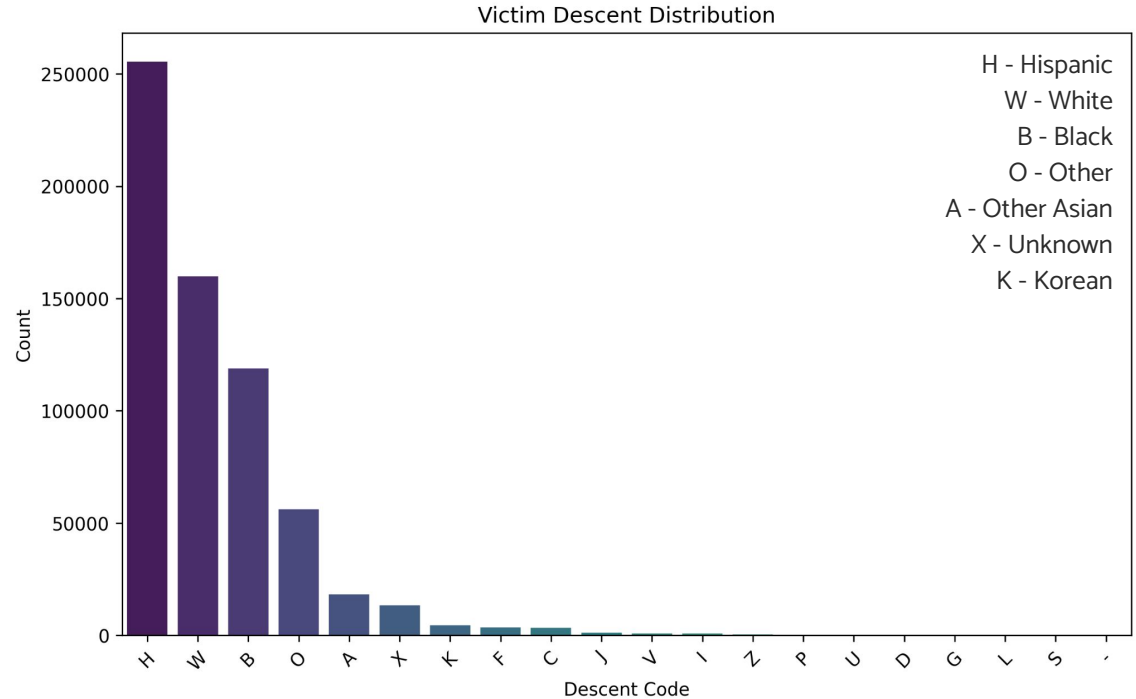
Crime against Asian Descent - Percentages

Crime against Asian Descent - Counts

- Around a 40% increase for crimes against asians

- Increase in around 2,000 cases each year since 2020

Crimes Per Year Commited Against People of Asian Descent

Conclusions

Overall not a large change in crime behaviors trends, but some key takeaways are:

Government Shutdown:

Starting 2020, there was a drastic decrease in crime counts. This can be explained due to the mandatory government lockdown, however after restrictions started lifting and the community became more complacent, crime counts gradually returned to normal levels.

Crime Displacement:

Central had the most crime rate increase, along with other popular areas such as Hollywood and West LA. Dense population, tourism, and inflation can easily give rise to economic hardship and turmoil.

Shift in Victim Sex:

In a majority of the affected areas, more males became victim of crime than females prior to COVID. One of the few areas that doesn't follow this trend is Southeast, where much more females become victim.

Shift in Victim Ethnicity:

Crimes against people of asian descent increased quite drastically, both in case counts and relative to usual distribution. This increase can possibly be attributed to xenophobia, or stereotypes of COVID-19 that surround asians, influence by media, policymakers, and the community itself.

Thank You