Analysing the effects of COVID-19 on Crime in the United States*

A deep dive into criminal activity during the pandemic

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Abstract

The COVID-19 pandemic caused the various state-level governments in the United States to issue stay-at-home orders in early 2020. These policy measures resulted in sweeping impacts on the everyday life of people with mostly negative implications. The more negative implications of the pandemic have generally eclipsed the more positive aspects such as the reduction of crime rates by 37% worldwide (Boman and Mowen 2021), and also the noticeable drop in carbon emissions (Bauwens et al. 2020) and elevation of air quality around the world—in turn reducing pollution-related respiratory issues (Dutheil, Baker, and Navel 2020). While crime rates globally have gone down, it is also important to take a granular look at the crime data to observe which types of crimes have been most affected, and further, examine if there is a significant correlation between crime rates and COVID-19 cases — which is precisely the goal of this study. We achieve our goal of analyzing the pandemic data in conjunction with crime data obtained from the official city websites through time series modeling and also exploratory data analysis focusing on the criminal activity in key US cities such as Chicago, Los Angeles, Philadelphia, and Seattle. Each city has been chosen specifically to reflect different American aspects, geographical as well as socio-economic, to enable us to form more generalizable as well as granular conclusions.

Keywords: COVID-19 Pandemic, Criminal Behaviour, Time Series Modelling, Correlation, Dataset Creation, Criminal Psychology

1 Introduction

The COVID-19 pandemic caused the various state-level governments in the United States to issue stay-at-home orders in early 2020. These policy measures resulted in sweeping impacts on the everyday life of people with mostly negative implications. The onset of the pandemic brought with it a host of other issues like job losses, unemployment, financial crisis, and mental health issues. The pandemic also forced people to stay at home for prolonged periods, sometimes over a month, which seemed to have exasperated opioid abuse and also relapse of a host of other addictions. Furthermore, it has also been shown that the pandemic has led to increased stress and anxiety levels among individuals (Boman and Gallupe 2020). These negative implications of the pandemic have generally eclipsed the more positive aspects such as the reduction of crime rates by 37% worldwide (Boman and Mowen 2021), and also the noticeable drop in carbon emissions (Bauwens et al. 2020) and elevation of air quality around the world—in turn reducing pollution-related respiratory issues (Dutheil, Baker, and Navel 2020). While crime rates globally have gone down, it is also important to take a granular look at the crime data to observe which types of crimes have been most affected, and further, examine if there is a significant correlation between crime rates and COVID-19 cases — which is precisely the goal of this study.

The main goal of our paper is to examine the effect that the pandemic has brought in terms of specific crimes such as assault, battery, criminal theft, and much more based on state-level crime data within the United States. The main motivation behind this research is the scarcity of work examining the effect of

*Code and data are available at: https://github.com/the-infiltrator/COVID-19-Crime

the pandemic on crime, even though there has been a lot of work done examining other aspects concerning the pandemic. News stations have consistently reported lower crime rates but have based their analyses on simply the rate of 911 calls and not actual police data. We aim to bridge this gap by focusing on the criminal activity in key US cities such as Chicago, Los Angeles, Philadelphia, and Seattle. Each city has been chosen specifically to reflect different American aspects, geographical as well as socio-economic, to enable us to form more generalizable as well as granular conclusions.

The key motivation for our work is previous work showing that certain crimes like domestic violence saw a significantly smaller drop as compared to other crimes after the onset of the pandemic (Bullinger, Carr, and Packham 2020), indicating the importance of the nature of the actual crime committed. Our focus on individual city data is due to known data collection issues for such research (Boman and Gallupe 2020) and is motivated by preliminary studies showing that the crime rates for specific crimes are largely dependent on the city (Ashby 2020). There are also other factors such as the George Floyd protests in June 2020 that we hypothesize may have resulted in a noticeable increase in the vandalism and theft crimes in certain cities.

Overall, our paper is a small contribution building upon and motivated by several recent papers that have covered the impact of the pandemic on the human psyche and crime rates across different states and countries Nivette et al. (2021) alongside work prompting further research in the area (Eisner, Nivette, et al. 2020). We achieve our goal of analyzing the pandemic data in conjunction with crime data obtained from the official city websites through time series modeling and also exploratory data analysis.

In the following section, we outline how data for this study was collected alongside an overview of the data. In Section 3 we outline, in detail our modeling approaches and in Section 4 the results are provided for each city. We conclude our study with a detailed discussion in Section 5, explaining some of our key findings and conclusions.

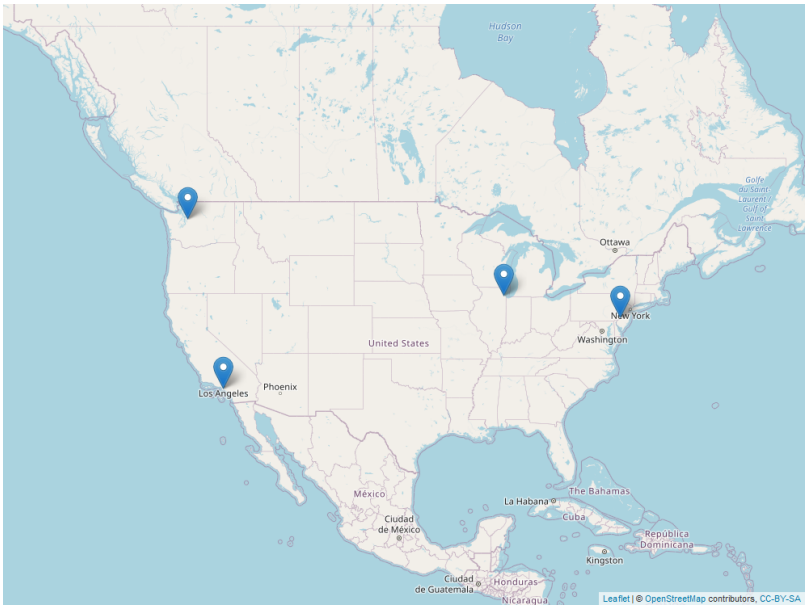

Figure 1: Summary of several important variables present within the survey data

2 Data

The primary data set used is publicly available from the the R, COVID-19 Data Hub (Guidotti and Ardia 2020) containing a daily summary of COVID-19 cases, deaths, recovered, tests, vaccinations, and hospitalizations for 230+ countries, 760+ regions, and 12000+ administrative divisions of lower level including policy measures, mobility, and geospatial data. Furthermore, we use city data for each city involved in our study

to examine the crime rates across the pandemic and the city-wise data sources are outlined below alongside exploratory analyses of both COVID-19 and crime data.

2.1 Chicago

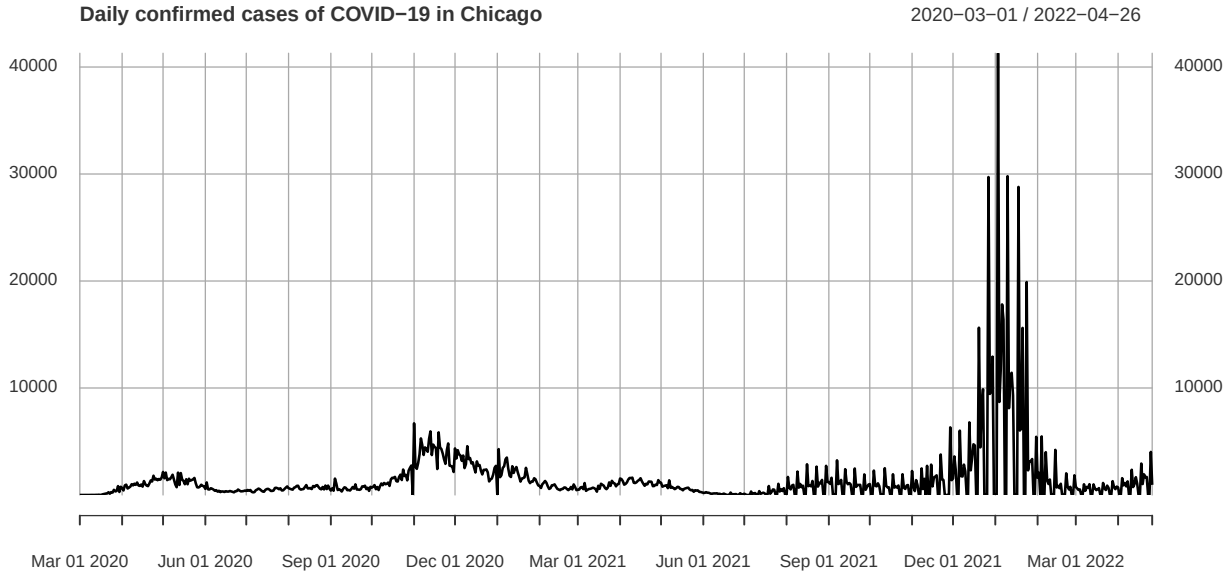

Figure 2: Daily Confirmed Cases of COVID-19 in Chicago

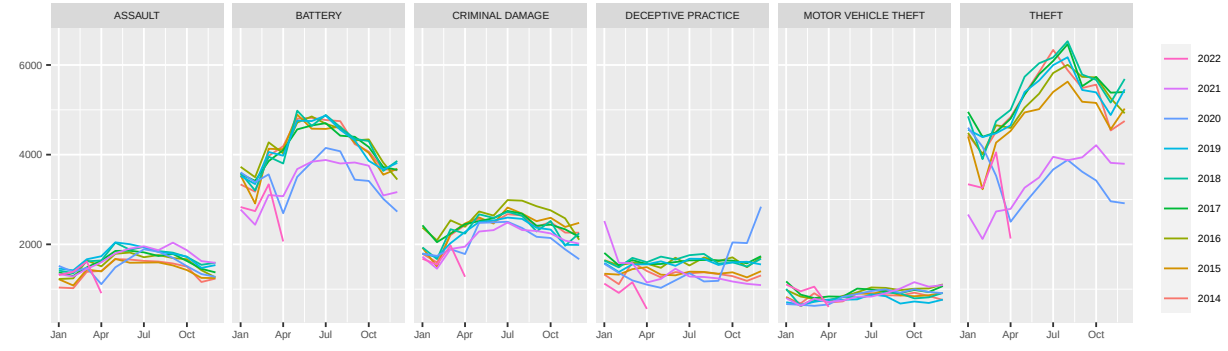

Figure 3: Yearly Trends for the top five crimes in Chicago

2.2 Los Angeles

2.3 Seattle

2.3.1 Philadelphia

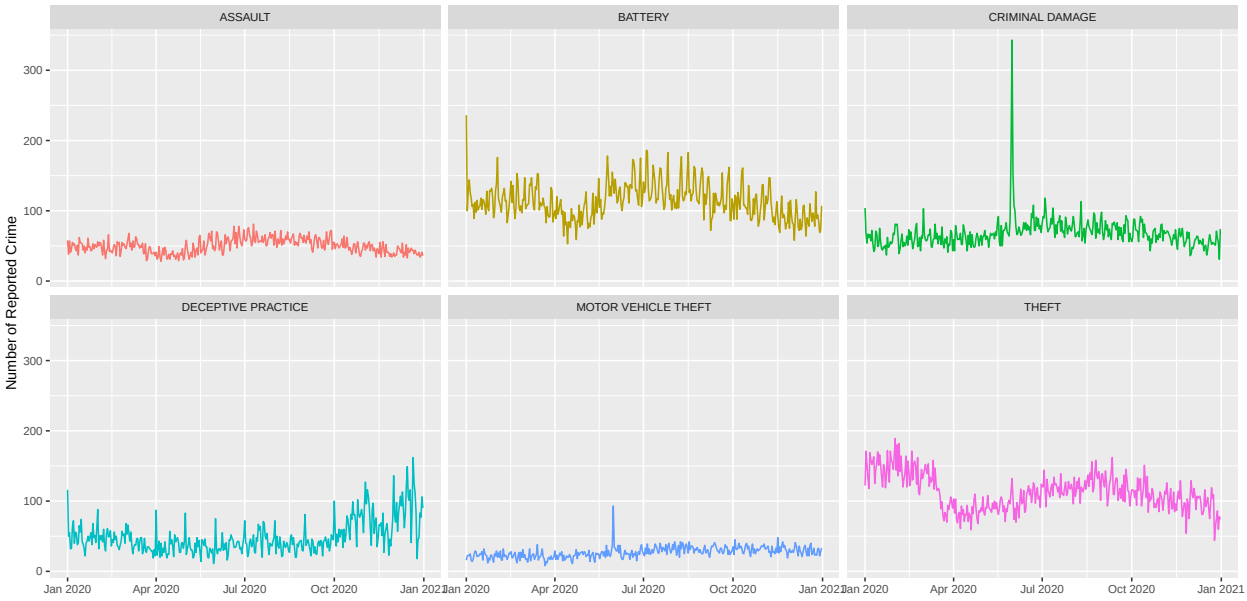

Figure 4: Frequency of each crime during months spanning the COVID-19 pandemic.

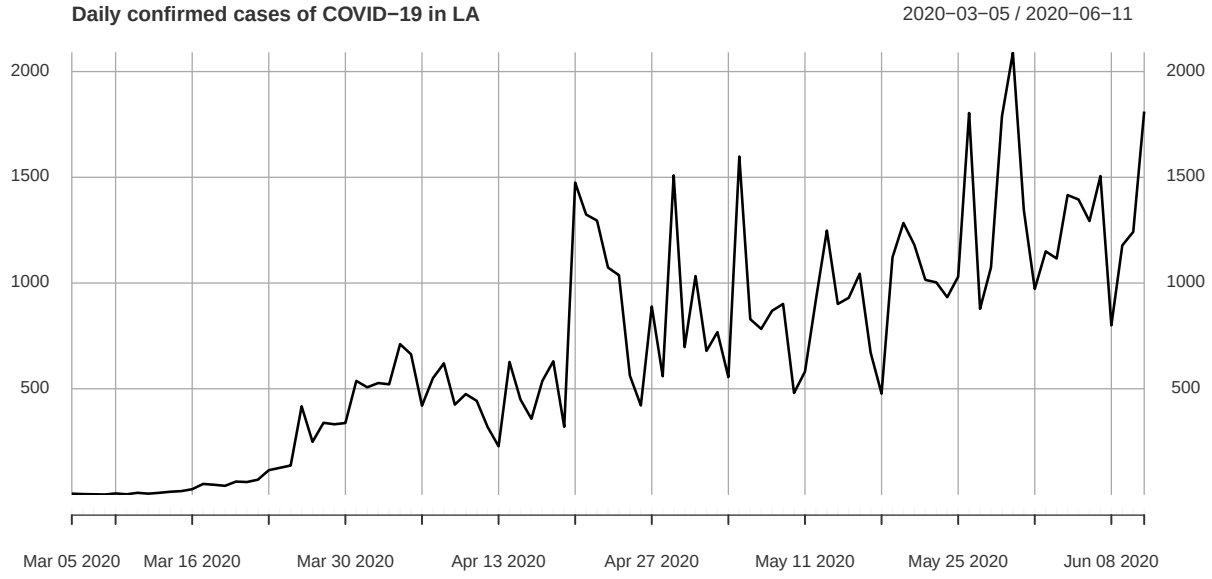

Figure 5: Daily Confirmed Cases of COVID-19 in L.A

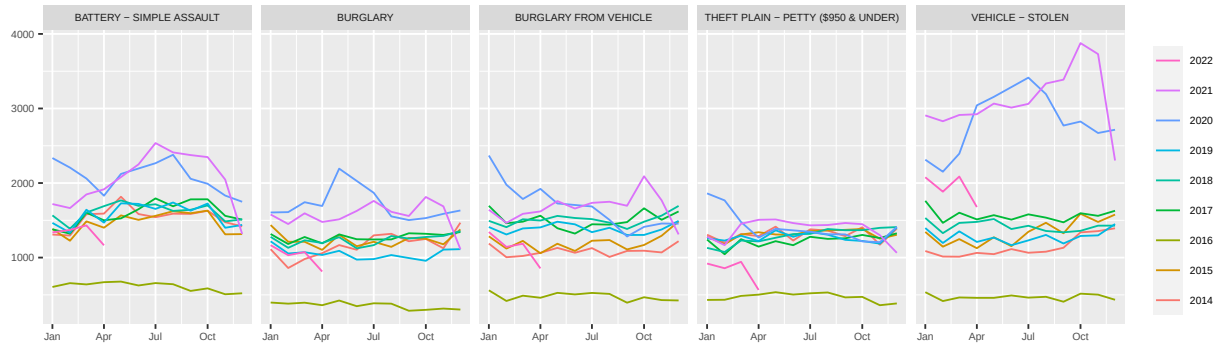

Figure 6: Yearly Trends for the top crimes in Los Angeles

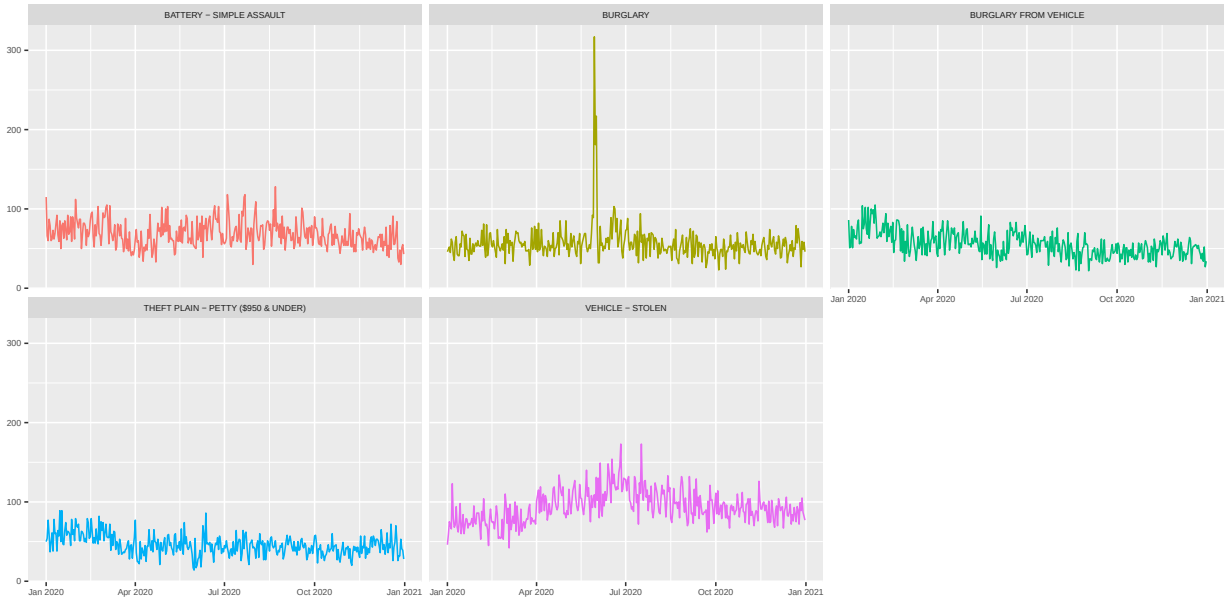

Figure 7: Frequency of each crime during months spanning the COVID-19 pandemic.

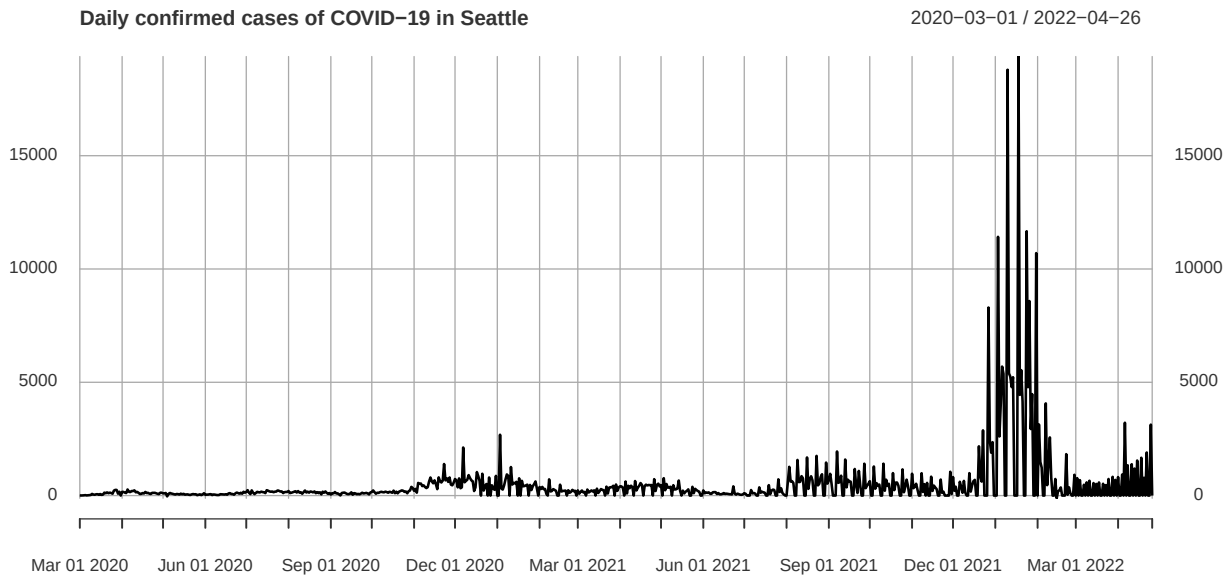

Figure 8: Daily Confirmed Cases of COVID-19 in Seattle

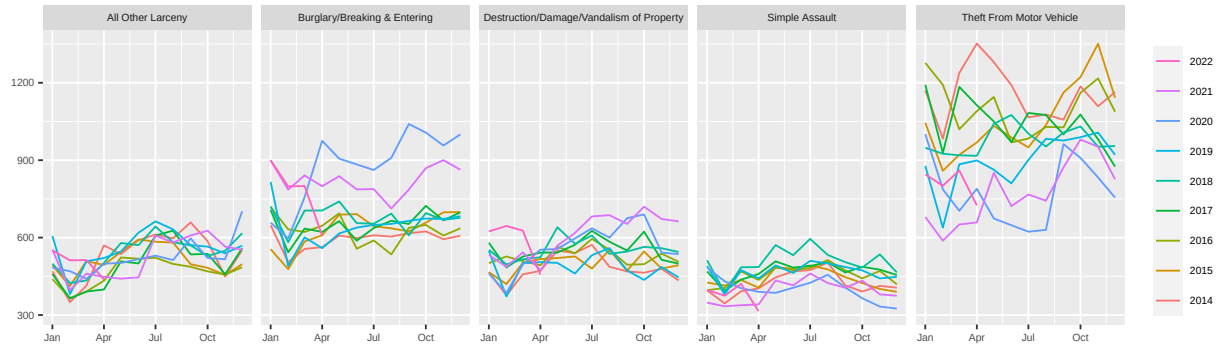

Figure 9: Yearly Trends for the top crimes in Seattle

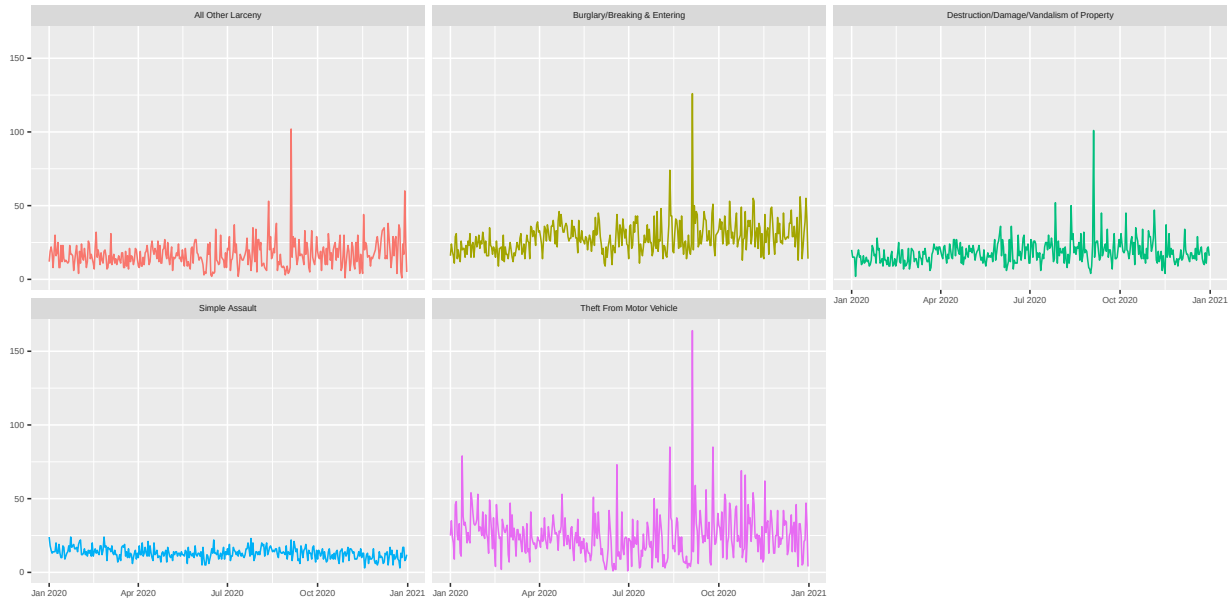

Figure 10: Frequency of each crime during months spanning the COVID-19 pandemic.

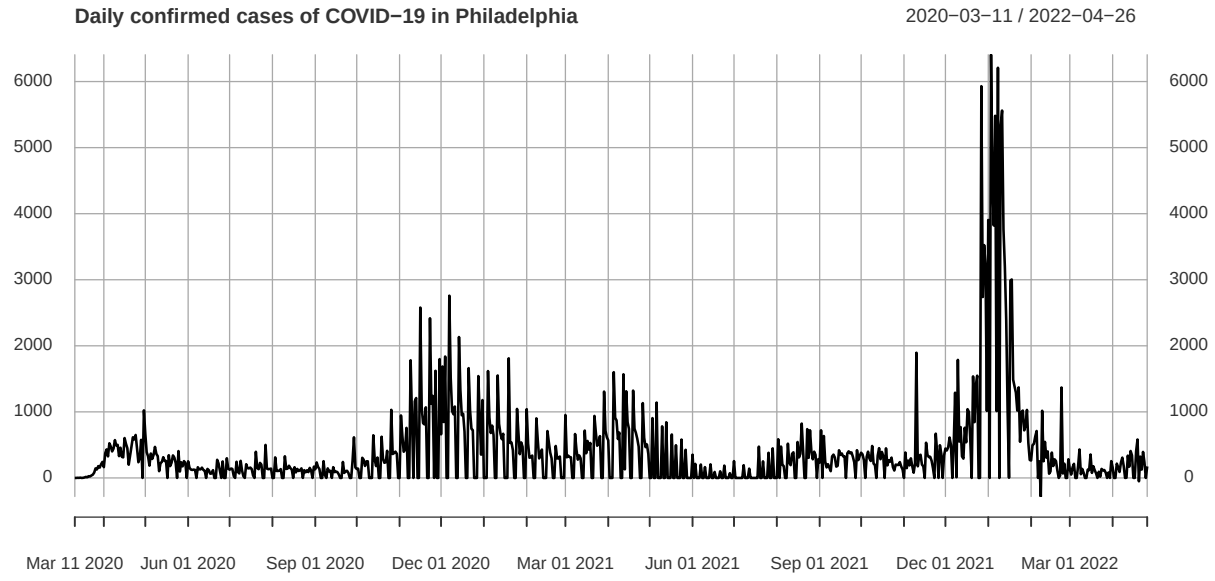

Figure 11: Daily Confirmed Cases of COVID-19 in Philadelphia

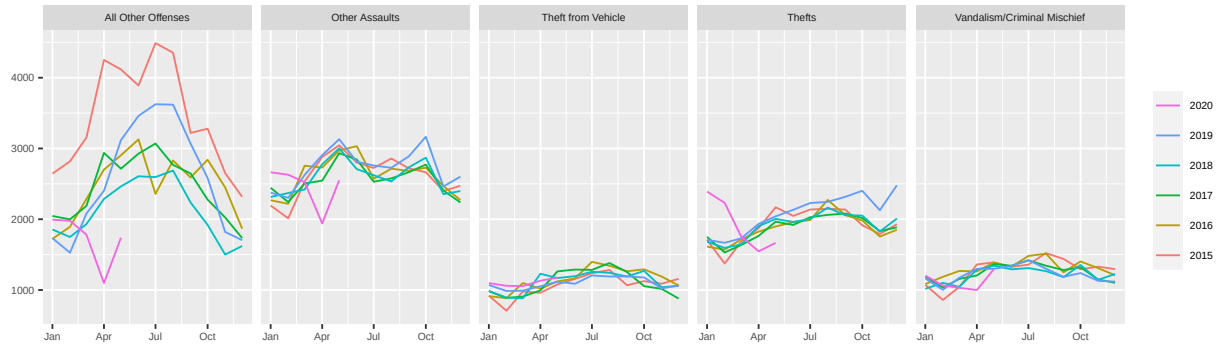

Figure 12: Yearly Trends for the top crimes in Philadelphia

Figure 13: Frequency of each crime during months spanning the COVID-19 pandemic.

3 Model

4 Results

5 Discussion

5.1 First discussion point

If my paper were 10 pages, then should be be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

5.2 Second discussion point

5.3 Third discussion point

5.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

References

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