

A silhouette photograph of two people walking away from the viewer through a field. The person on the left is carrying a long staff or cane. The scene is backlit by a low sun, creating a bright glow and lens flare in the background.

Opportunity for Criminals? COVID-19 Pandemic

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Introduction



Scammers knocking on doors and pretending to be CDC workers
(Source: Twitter)

Criminals have been taking advantage of vulnerabilities due to COVID-19.

How are **COVID-19** and **crimes** related?

We focus on **burglary** and **robbery**, and we aim to discover a relationship between these crimes and COVID-19 to understand how criminals are taking advantage of COVID-19.

This knowledge can support people and businesses understand which crimes they should look out for more, which may help prevent additional crimes.

Data sources:

- NYCHealth (COVID-19 Cases in NYC from March 2nd to April 12th 2020)
- SpotCrime (Burglary and Robbery cases in NYC from March 2nd to April 12th for years 2018 to 2020)

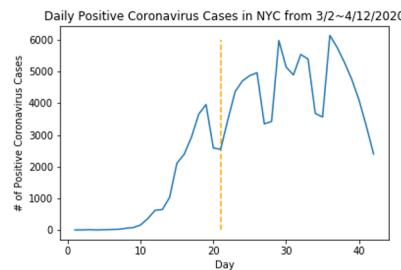
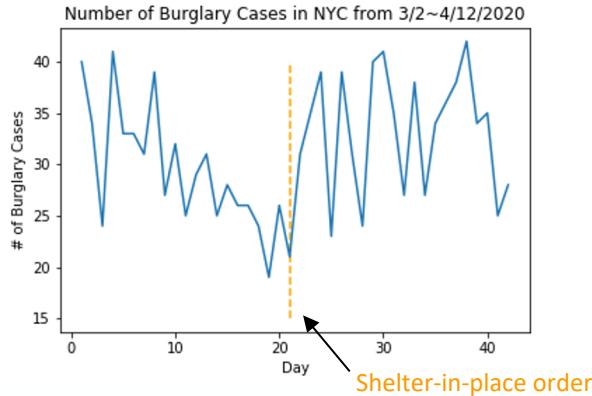
Workflow and Tools:

- 1. Collect Data, 2. Preprocess Data, 3. Conduct Analysis using the following tools:
 - Jupyter Notebook (Tool to run scripts to generate visualizations)
 - CartoDB (Data visualization tool to generating heatmaps)

Coronavirus vs Burglary

=> entry into a building illegally with intent to commit a crime, especially theft

(by Oxford dictionary)



Main Finding:

There is an obvious difference in the # of burglary cases before and after the shelter-in-place order.

Correlation

vs COVID-19 Cases before order	vs COVID-19 Cases after order	vs COVID-19 Cases throughout
-0.62	0.58	0.20

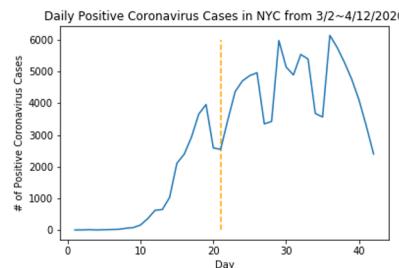
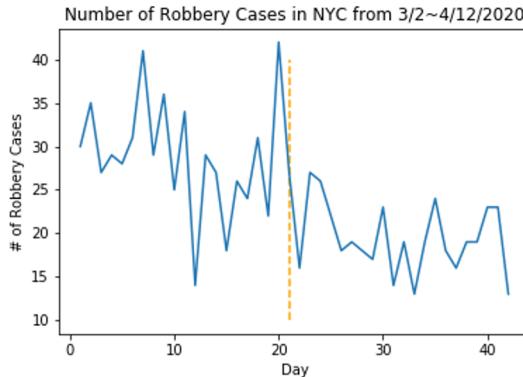
(First two correlations are statistically significant at significance level 0.01)

Hypothesis

1. Since the # of burglary cases decrease as COVID-19 cases increase before shelter-in-place order:
=> instability in people's lifestyles
=> uncertainty in location of people
1. Since the # of burglary cases increase as COVID-19 cases increase after shelter-in-place order:
=> certainty in location of people (at home)
=> businesses become easier targets

Coronavirus vs Robbery

=> the action of taking property unlawfully from a person or place by force or threat of force
(by Oxford dictionary)



Main Finding:

The # of robbery cases are low when the # of positive coronavirus cases are high.
(Regardless of the shelter-in-place order)

Correlation

vs COVID-19 Cases before order	vs COVID-19 Cases after order	vs COVID-19 Cases throughout
-0.33	-0.13	-0.62

(Last correlation is statistically significant at significance level 0.01)

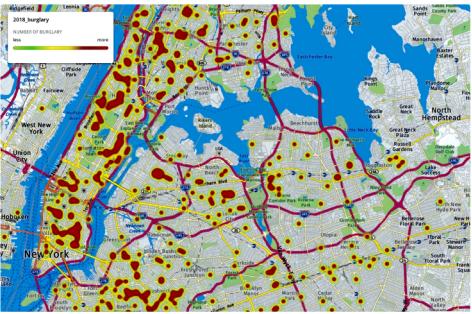
Hypothesis

1. Criminals may be changing their strategies from taking property from people by force, to just taking property (=> burglary), since it is “easier”.
2. Criminals may not want human contact due to the COVID-19.

Crime Heatmaps

We also generated heat maps to visualize the crime concentrations in year 2020 compared with previous years:

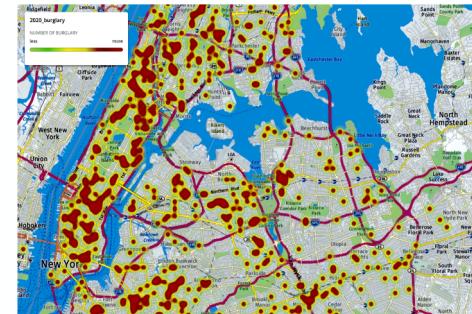
Burglary



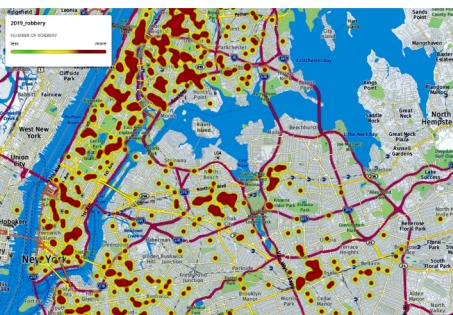
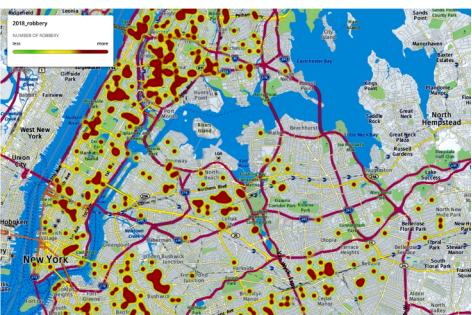
2019



2020



Robbery



- # of burglary cases increased and # of robbery cases decreased during 2020 pandemic.
- Crime concentration areas have shifted(Mid Manhattan area, etc.) compared with previous years.

Discussion

- Conclusion: Shelter-in-place order **makes burglaries easier** and **criminals are shifting strategies** during the pandemic. Empty properties near areas like Midtown Manhattan can be vulnerable to burglaries.
- Limitations: Our analysis only focused on burglary and robbery cases within NYC. Also, if we had data regarding the type of businesses in each location, we could show which businesses were more vulnerable to crime during the pandemic.
- Future work: We hope to enrich our analysis with more data sources such as types of businesses being targeted, crime time of a day, etc. Also, we hope to spread this analysis to alert people and businesses of crimes during this pandemic.