

FACEBOOK Data for Good

HATE CRIME MAPS
The case of New York City

Opportunity

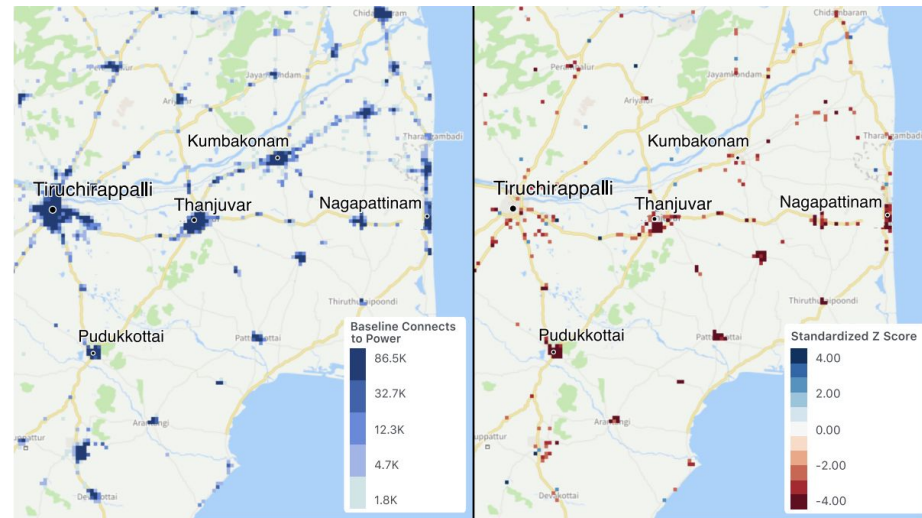
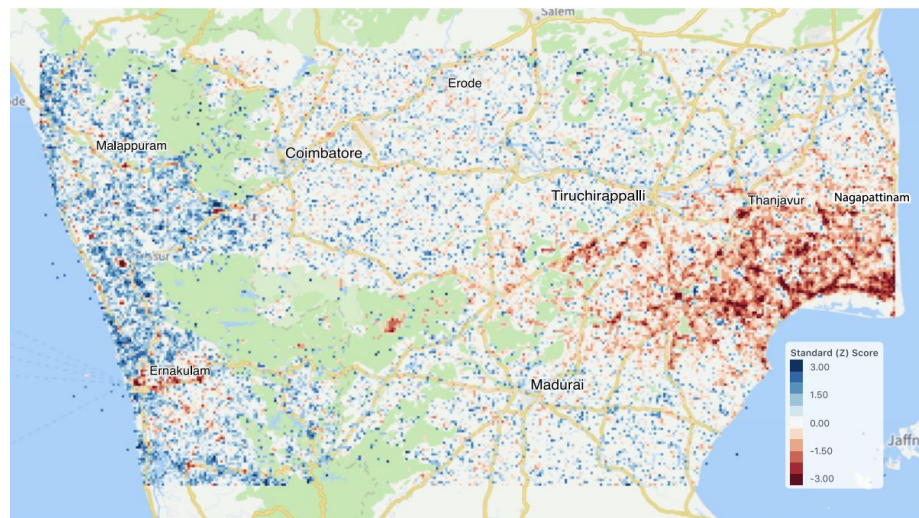
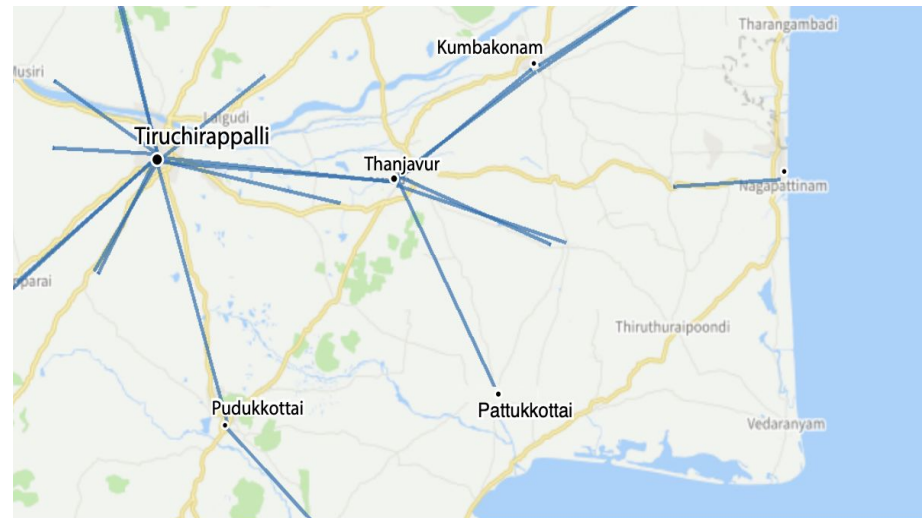
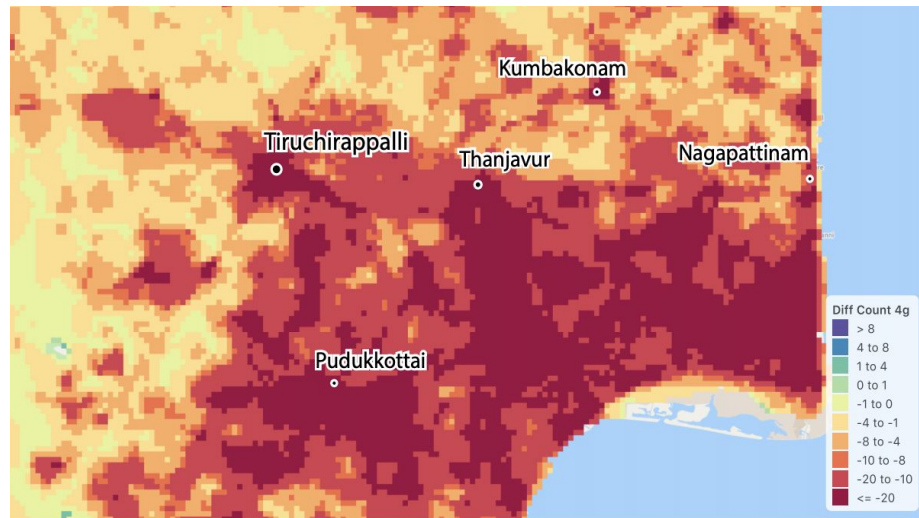
Behavioral Trend: hate crime content on Facebook products

Impact Hyp: by identifying trends in hate crimes Facebook can cooperate with government to facilitate appropriate resource allocation by area

Hate crimes in US reach highest level in more than a decade

By MICHAEL BALSAMO November 16, 2020





Methodology

Hate Crime Data: NYPD

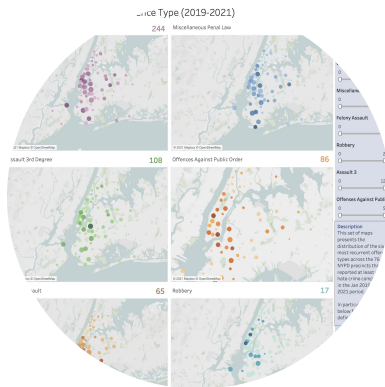
Precinct Data: NYPD

Converted to lat and lon
with Google API (geopy)

Cleaning/EDA: Google
Sheets

Data Visualization:
Tableau

Hate Crime Maps



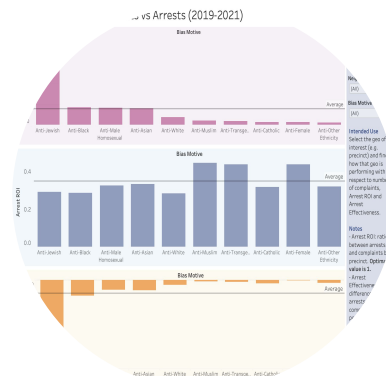
Time to Arrest

Arrest Date - Complaint
Date

Code Violation Level

*Needs Addressing if
offence percentile > 0.5*

Precinct Profile



Arrest ROI

Arrest/Complaint

Arrest Effectiveness

Arrest-Complaint

CASE STUDY

Manhattan South

Hate Crime Maps

Offence Types

Interpretation

1. Size proportional to number of complaints in every precinct
2. Color scaled on number of offences in every precinct

Conclusion

1. Criminal Mischief is prevalent, especially in Precinct 10 and 13
2. Precinct 10 scores poorly on multiple offences

[Tableau Dashboard](#)

Hate Crime Maps | Offence Type (2019-2021)

TOTAL OFFENCES

156

Filters

Borough Name

Manhattan South

Complaint Precinct Co..

(Multiple values)

Criminal Mischief

0 10

Miscellaneous Penal L..

0 12

Felony Assault

0 5

Robbery

0 2

Assault 3

0 12

Offences Against Publi..

0 5

Description

This set of maps presents the distribution of the six most recurrent offence types across the 76 NYPD precincts that reported at least one hate crime complaint in the Jan 2019-Mar 2021 period.

See below four relevant offence definitions:

Criminal Mischief

Assault 3rd Degree

Off. Public Order

Felony Assault

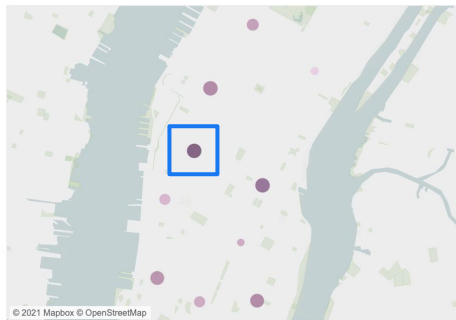
Note: Total Offences is less than or equal to Total Complaints

Criminal Mischief

47

Miscellaneous Penal Law

34

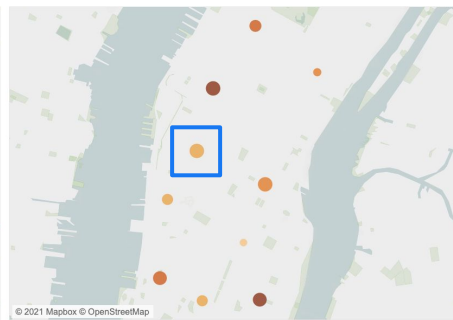


Assault 3rd Degree

23

Offences Against Public Order

23

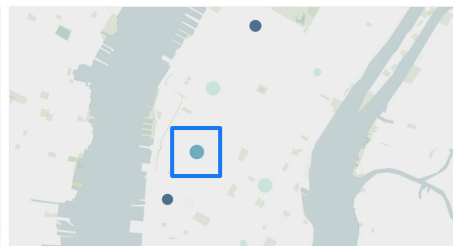
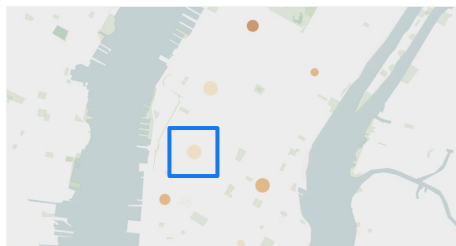


Felony Assault

24

Robbery

5



Hate Crime Maps

Main Components

Interpretation

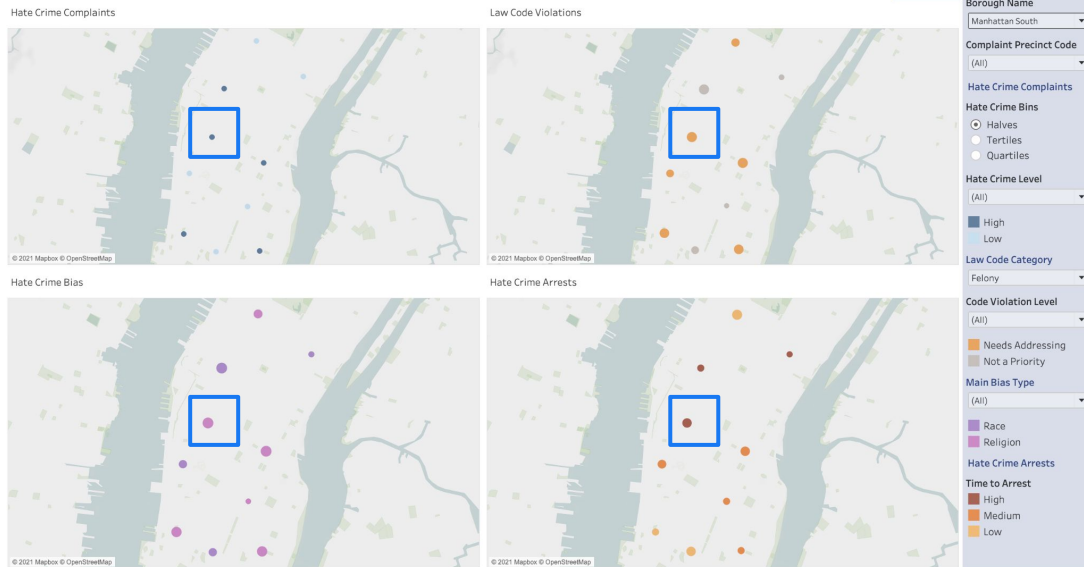
1. Size proportional to number of complaints (except top left map)
2. Color scaled based on different attributes of a crime

Conclusion

1. Six precincts need addressing
2. Race and Religion are the main bias types in Manhattan South
3. Precinct 10 scores poorly also on time to arrest

[Tableau Dashboard](#)

Hate Crime Maps | Main Components (2019-2021)



Precinct Profile

Complaints vs Arrests

Interpretation

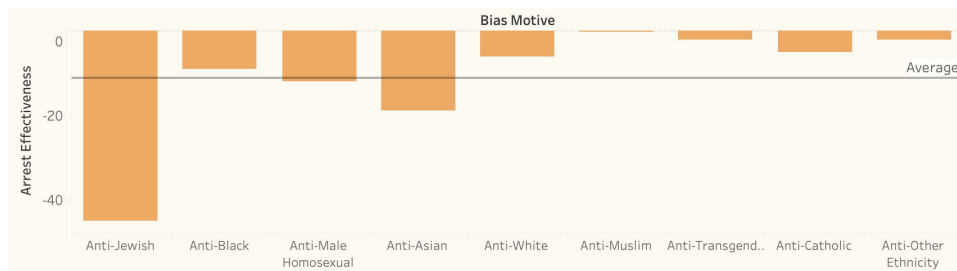
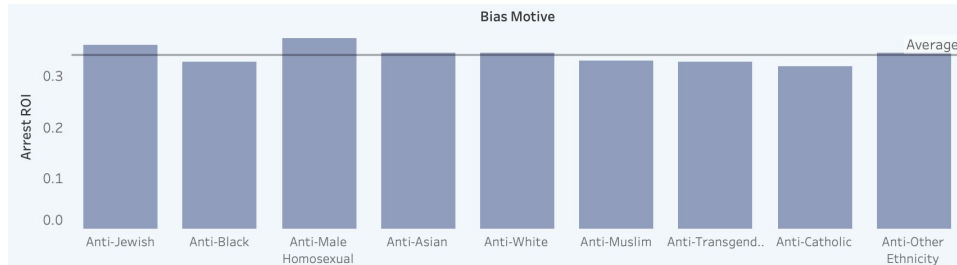
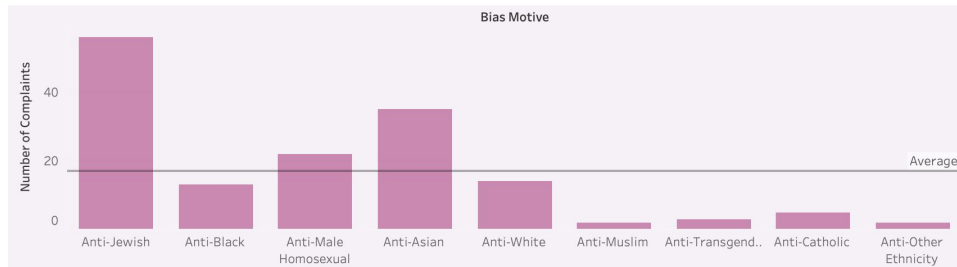
1. Compare number of complaints and Arrest ROI by bias motive
2. Compare number of complaints and Arrest Effectiveness by bias motive

Conclusion

1. Anti-Jewish bias motive is characterized by the most complaints for which no arrest has been made
2. Anti-Male Homosexual scores the highest in terms of arrests per complaint

[Tableau Dashboard](#)

Precinct Profile | Complaints vs Arrests (2019-2021)



Filters

Borough Name

Manhattan South

Precinct

(All)

Neighbourhood

(All)

Bias Motive

(All)

Intended Use

Select the geo of interest (e.g. precinct) and find how that geo is performing with respect to number of complaints, Arrest ROI and Arrest Effectiveness.

Notes

- Arrest ROI: ratio between arrests and complaints by precinct. **Optimal value is 1.**

- Arrest Effectiveness: difference by arrests and complaints. In a perfect work. **Optimal value is 0.**

- The data is related to the Jan 2019-Mar 2021 period.

Precinct Profile

Hate Crime Arrests

Interpretation

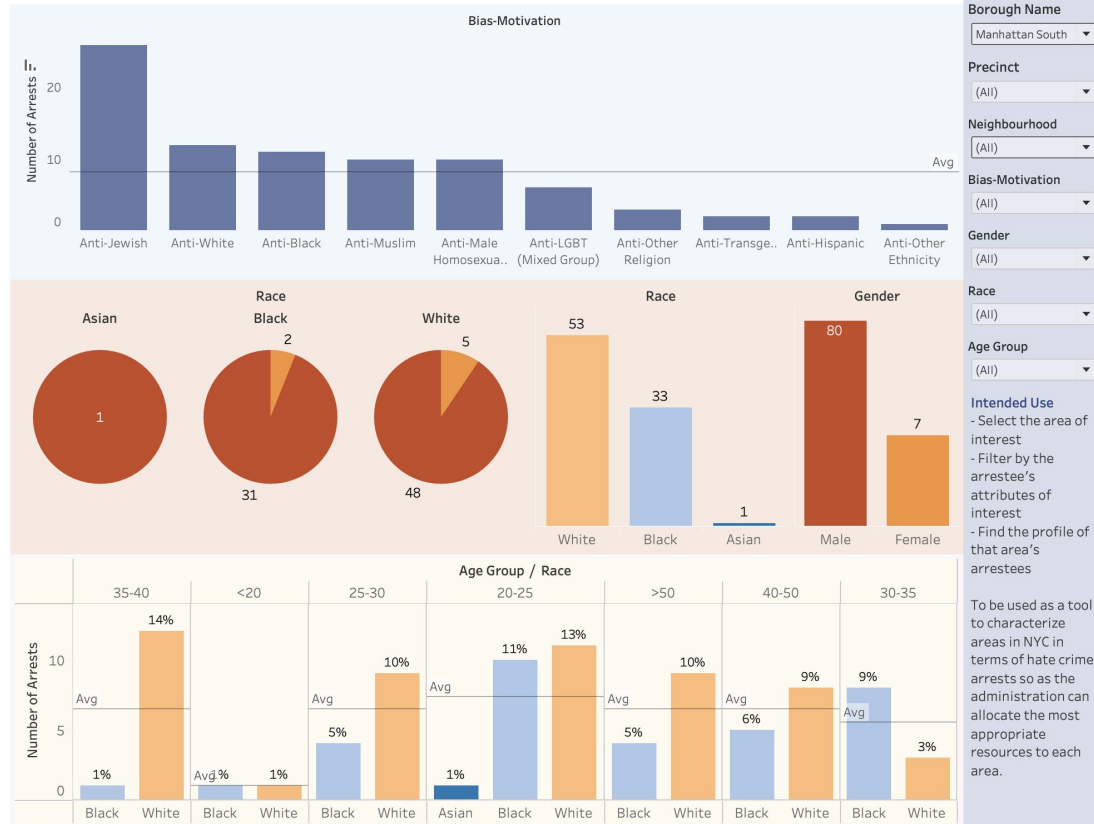
1. Identify the main attributes of hate crime arrestees by area of interest

Conclusion

1. Prevalent Race: White
2. Prevalent Gender: Male
3. Prevalent Age Group: 20-25 and 35-40

Tableau Dashboard

Precinct Profile | Arrests (2017-2019)



Summary Results - Manhattan South

Main Offence

Criminal Mischief

Problematic Precincts

10, 13, 7

Most Unaddressed Crimes

**Anti-Jewish &
Anti-Asian**

Arrestee Persona

**White, Male,
20-25 & 30-40**

Proposed Solution Path

1. Text/Image recognition to identify hate crime posts on Facebook
2. NLP to process and analyze the user-generated content
3. Classification model to determine if an event is a hate crime

Final Word on Bias

- **Representation Bias:**
 - Some groups are more prone to report hate crimes
 - Model favoring Facebook users
 - Imbalanced data collection practices by NYPD precinct
 - General underreporting of hate crimes across categories
- **Evaluation Bias:**
 - Suspect's prosecution is inherently biased (e.g. profiling)
 - Arrests only represent ~32% of hate crime complaints
 - Some areas are specifically targeted by police because of bias

Questions?