



Allegheny County **CrimeWatch**

Debarun Das
Nannan Wen

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Outline

- Background
- Objectives
- Datasets
- Implementation
- Results
- Future Works
- Demo



Background

- Safety of neighborhoods is a primary concern
- Awareness of safety:
 - Helps people choose safe neighborhoods to stay
 - Helps police make decisions on deployment of personnels
 - Helps investors to invest in safer neighborhoods for successfully running their business



Objectives

- To study the distribution of crimes in Allegheny County over a period of five years (2013 - 2017)
- Visualization of intensity of crimes on the basis of:
 - Year
 - Crime Type
- To analyse the distribution of crimes across different quarters and month in Allegheny County
- To classify crimes on the basis of their severity
 - Distribution of different types of crimes across Allegheny County



Datasets

- Crime Data:

- [Police Blotter 2005-2015](#)
- [police Blotter 2016 2019](#)

- Population Data:

- [ACS 13 5YR B01003 with ann](#)
- [ACS 14 5YR B01003 with ann](#)
- [ACS 15 5YR B01003 with ann](#)
- [ACS 16 5YR B01003 with ann](#)
- [ACS 17 5YR B01003 with ann](#)

- Census Data:

- [Allegheny_County_Census_Block_Groups_2016](#)

- Zip Code Data:

- [Allegheny_County_Zip_Code_Bo undaries](#)



Data Pre-processing

- Divide crime data based on
 - Years
 - Crime type
- Combine crime location (lat, lon) with the census and zip code boundaries data to identify the census tract for each crime entry
- Calculate total crimes in each tract for every year and type
- Normalize crime count by the total population in the tract



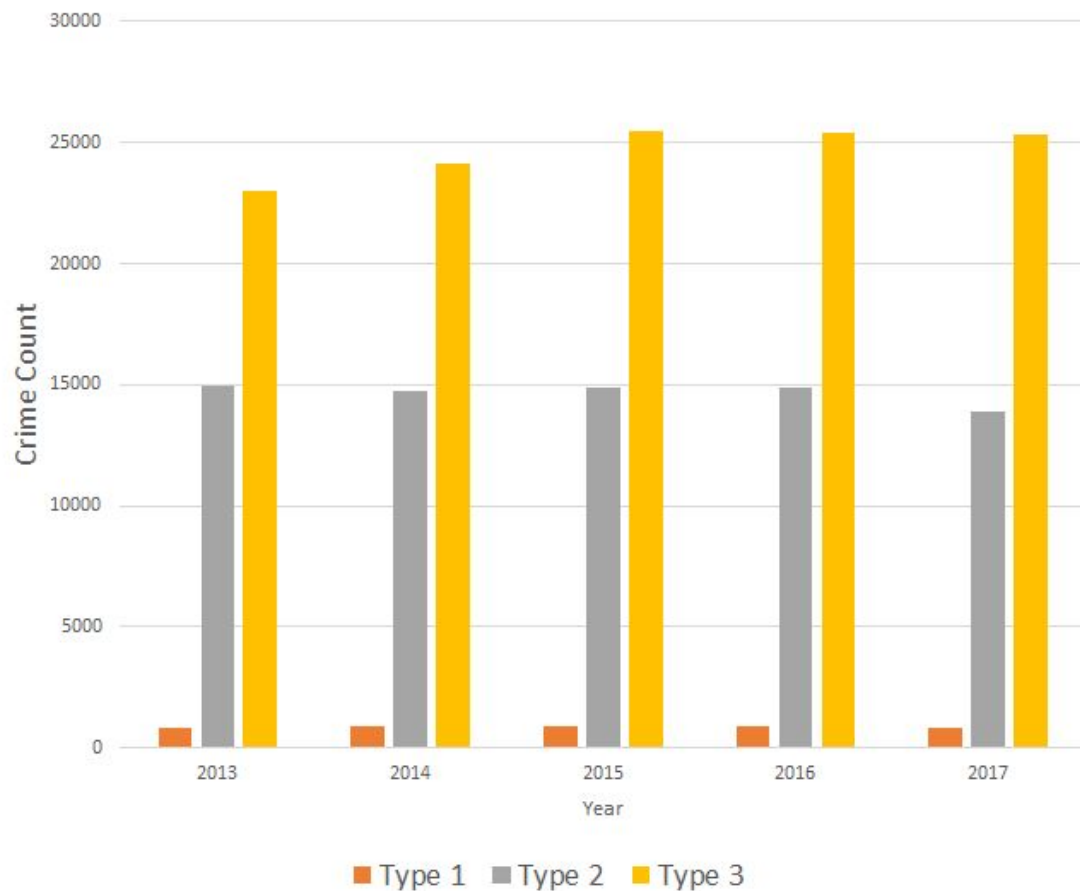
Implementation

- Created a web interface for visualization of the normalized crime count across census tracts in Allegheny County
- Crime count normalized by population in the census tract
- Crimes are classified as:
 - First Degree
 - Homicide, Rape, Kidnapping, Arson, Terrorist threats/activities
 - Second Degree
 - Theft, Assault, Burglary
 - Other Crimes



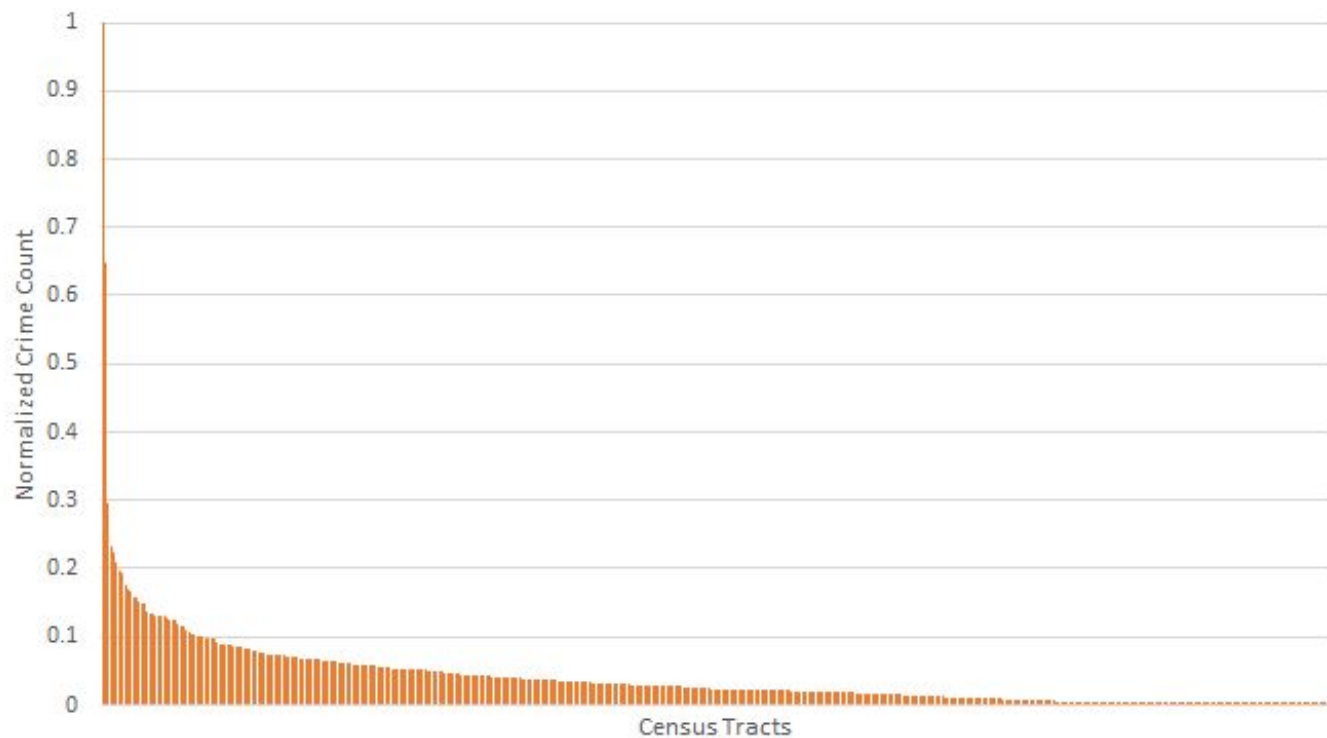
Results

Crime Count by Year



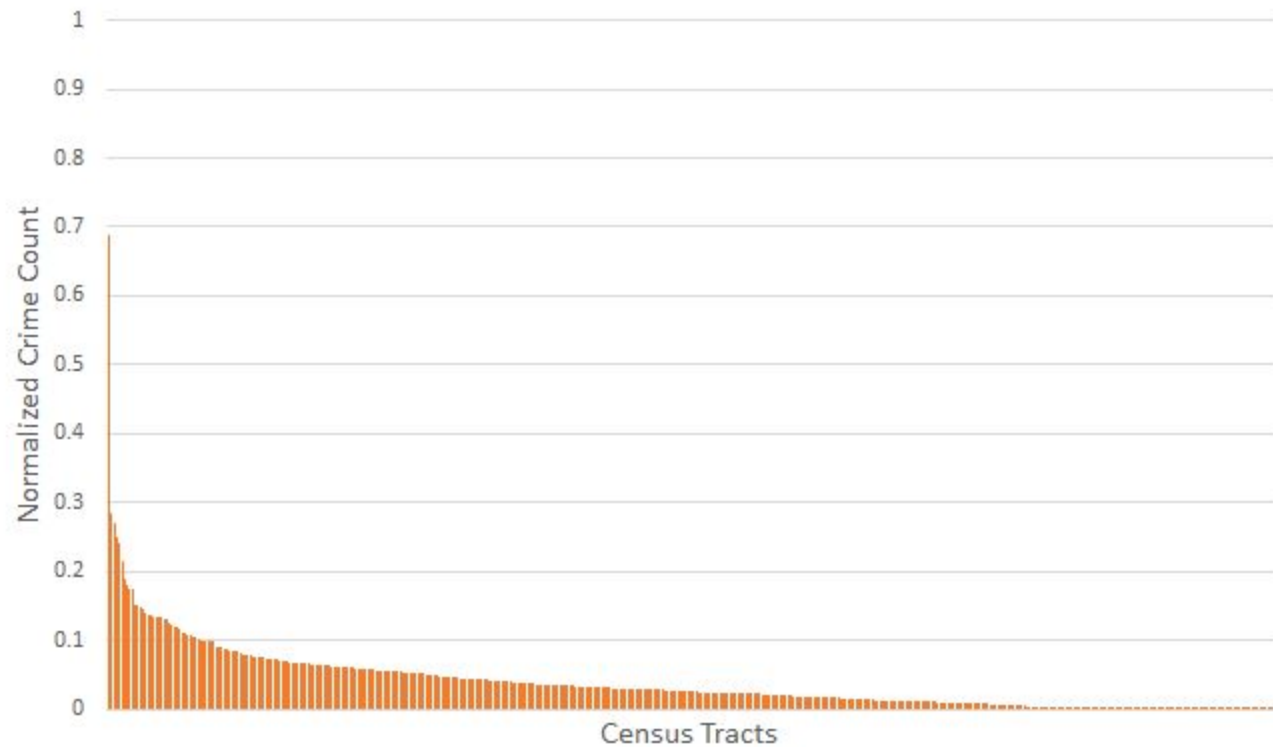
Year	Type of Crime		
	Type 1	Type 2	Type 3
2013	836	14979	23024
2014	873	14716	24161
2015	895	14900	25448
2016	914	14903	25432
2017	824	13864	25314

Distribution of Crimes across Allegheny County, 2013 (without outliers)

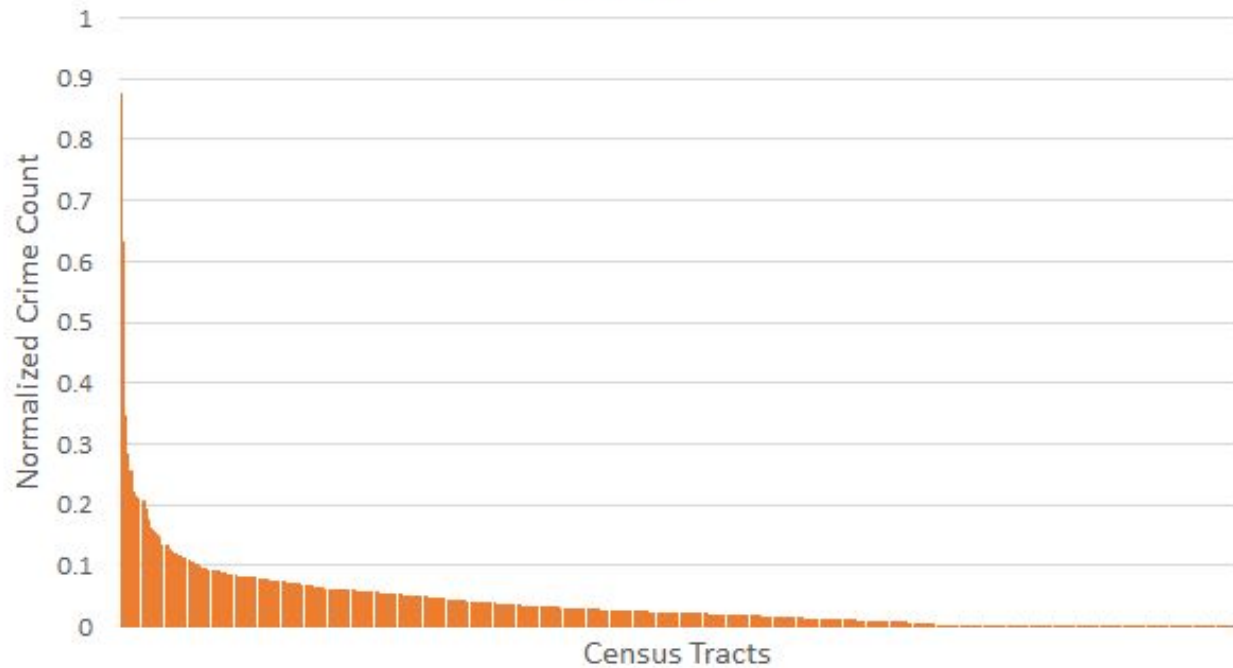




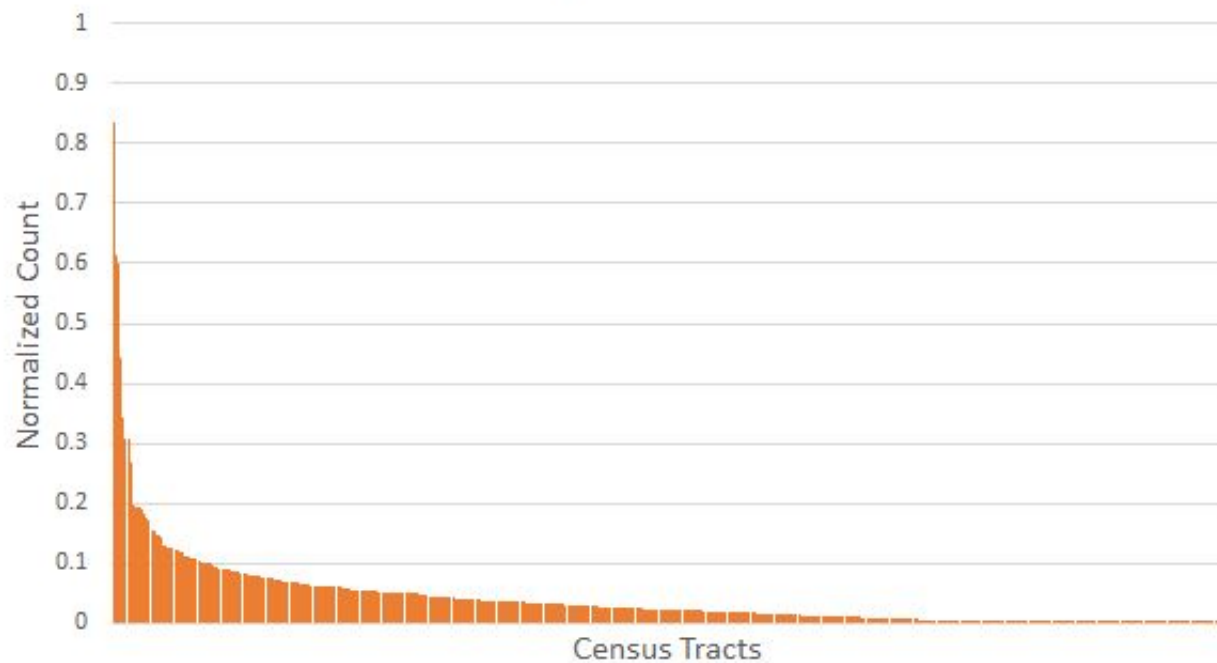
Distribution of Crimes across Census Tracts, 2014 (without outliers)



Distribution of Crimes Across Allegheny County, 2015 (without outliers)

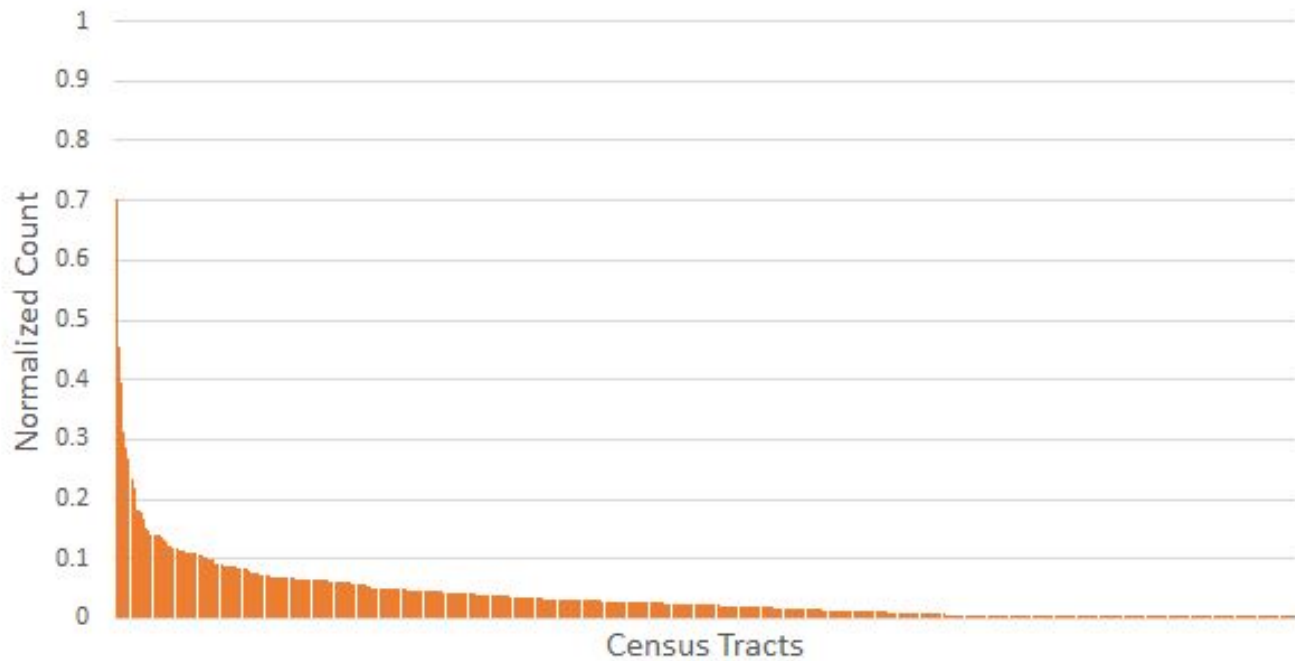


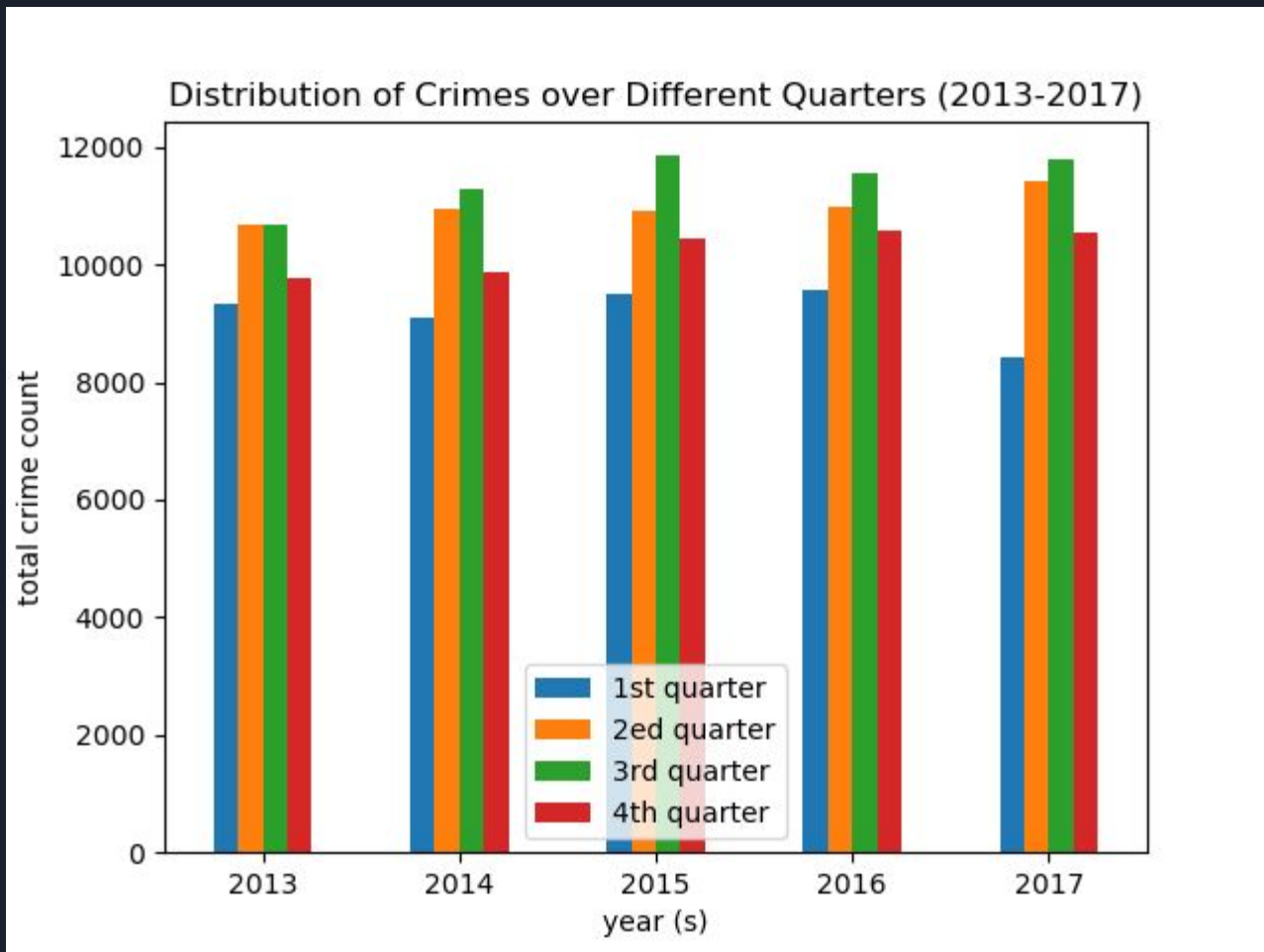
Distribution of Crimes across Allegheny County, 2016 (without outliers)



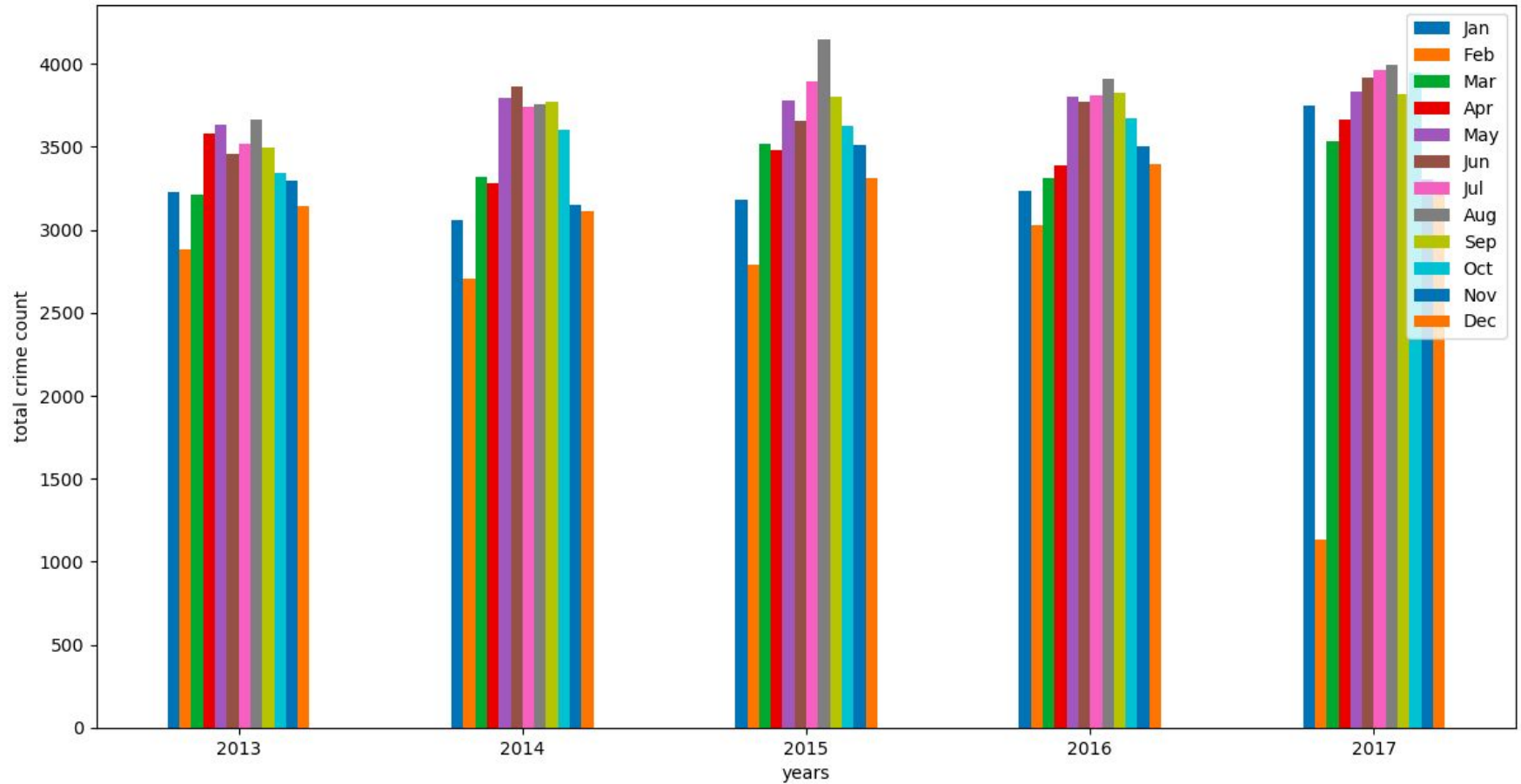


Distribution of Crimes across Allegheny County, 2017 (without outliers)





Distribution of Crimes over Different Months (2013-2017)





Future work

- To combine Allegheny county Property Assessment Dataset with the crime data to:
 - Study the relation between property value and crime rate
 - Predict the property value of a location based on:
 - Crime Rate
 - Past property valuations



DEMO

Allegheny County CrimeWatch

How safe has your neighborhood been?

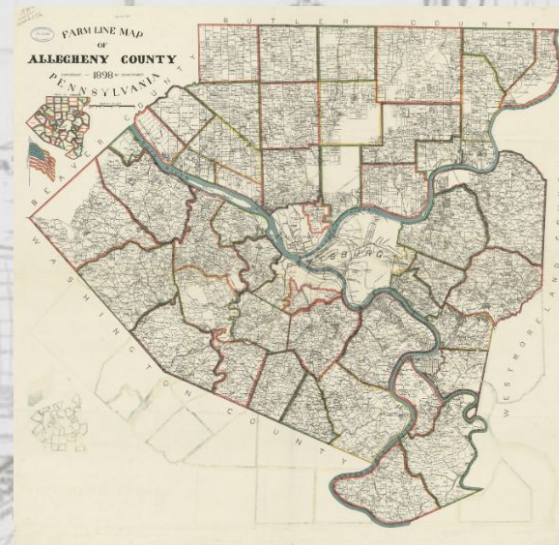
Year

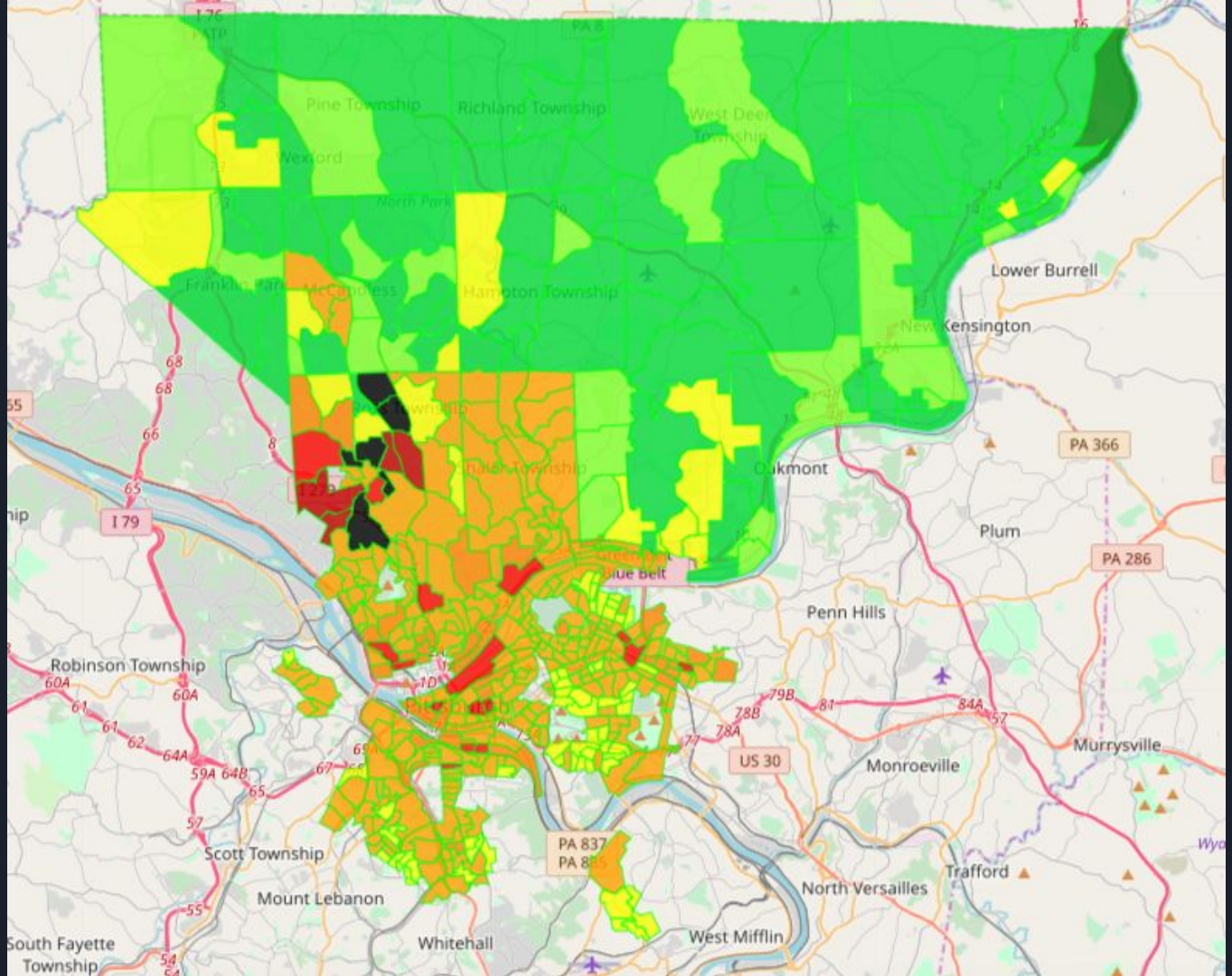
☐ 2013 ☐ 2014 ☐ 2015 ☐ 2016 ☐ 2017

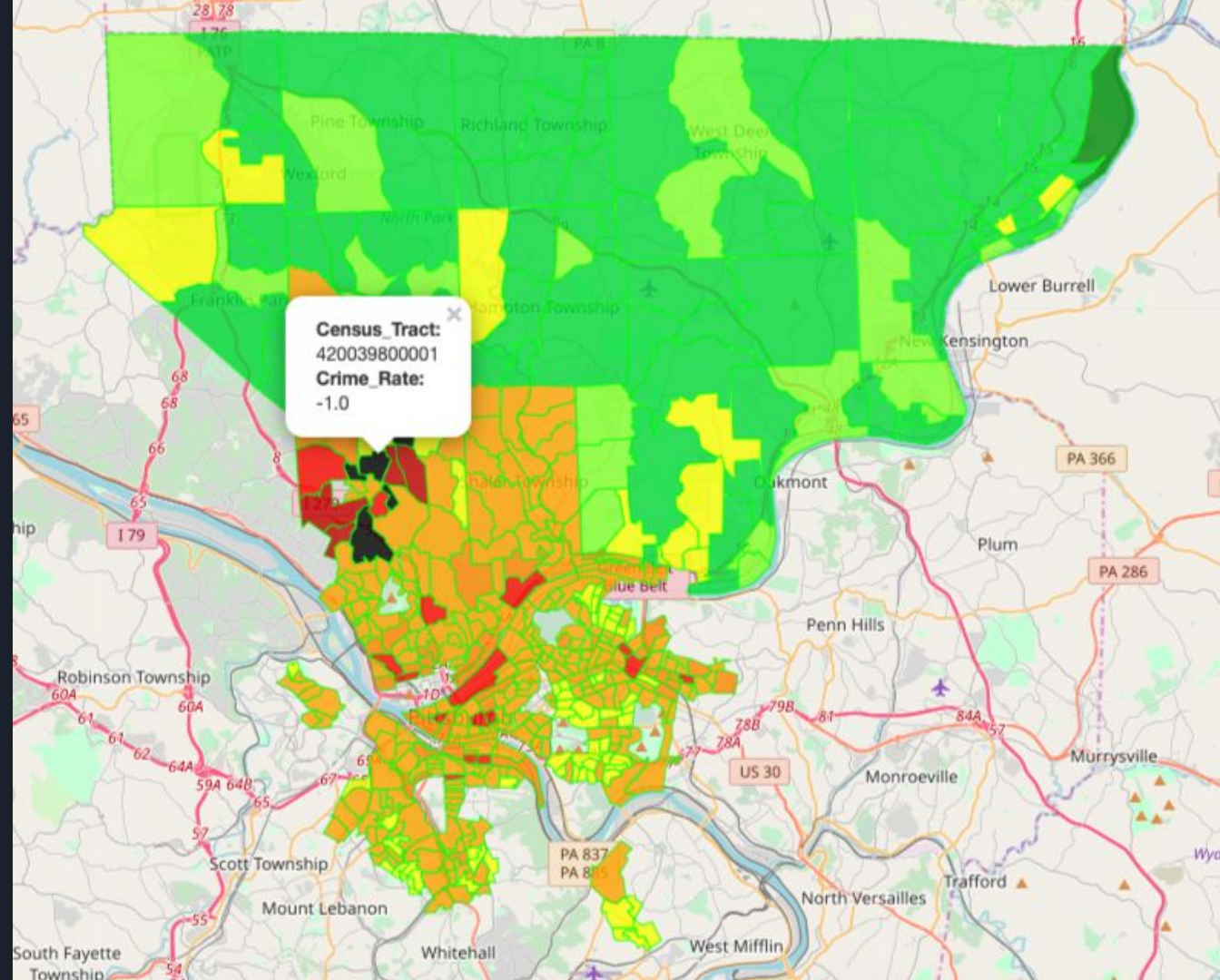
Crime Type

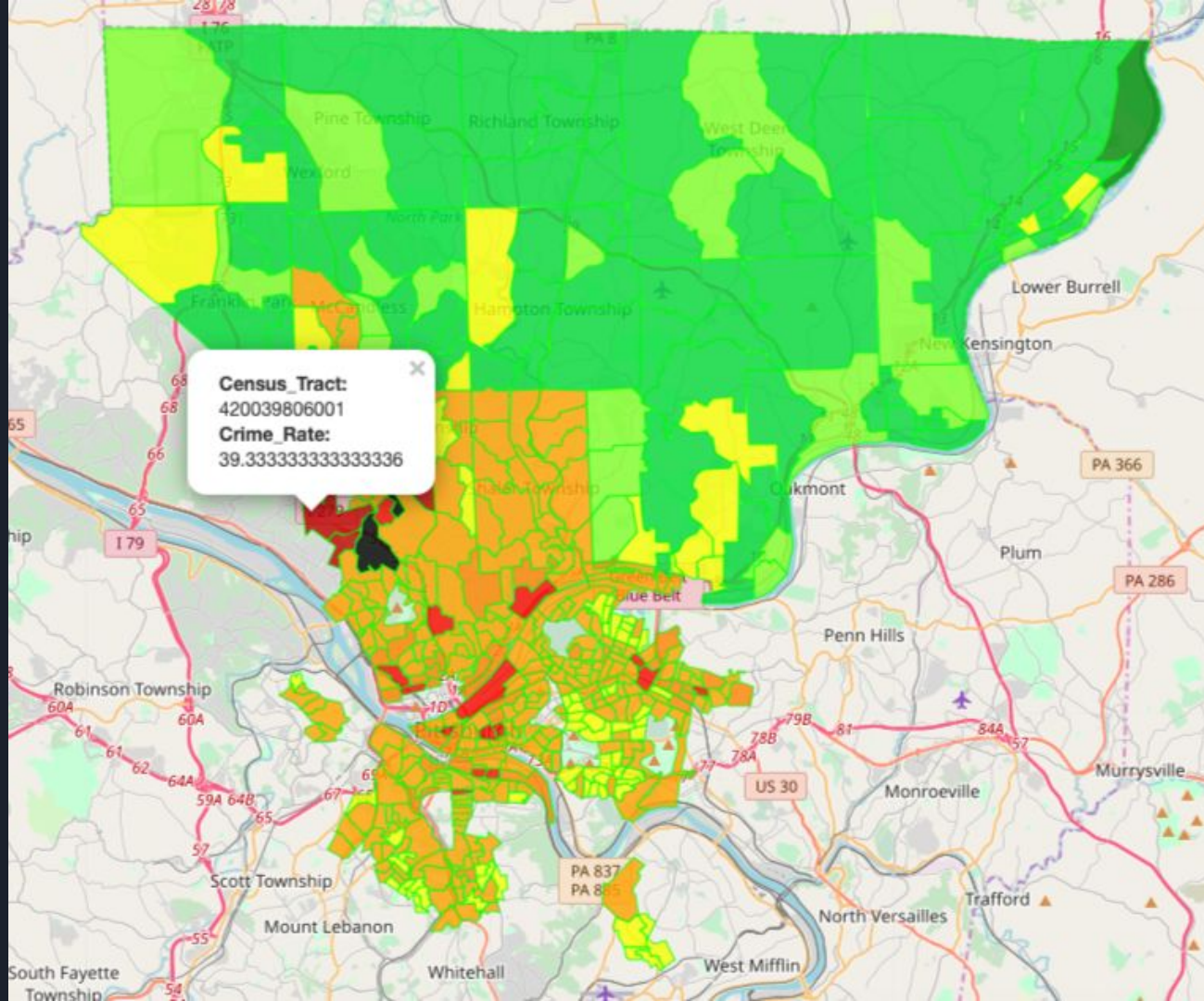
- ☐ FIRST DEGREE
- ☐ SECOND DEGREE
- ☐ MINOR CRIMES
- ☐ ALL OF THE ABOVE TYPES

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Thank You!