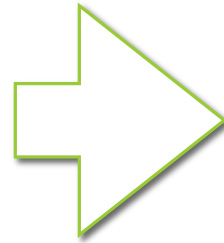


CRIME IN NYC PRECINCTS

- NEIL D'SOUZA, NIKHIL KISHORE, PRIYA KHOKHER, SACHIN VERMA

INTRODUCTION

1 year in NYC



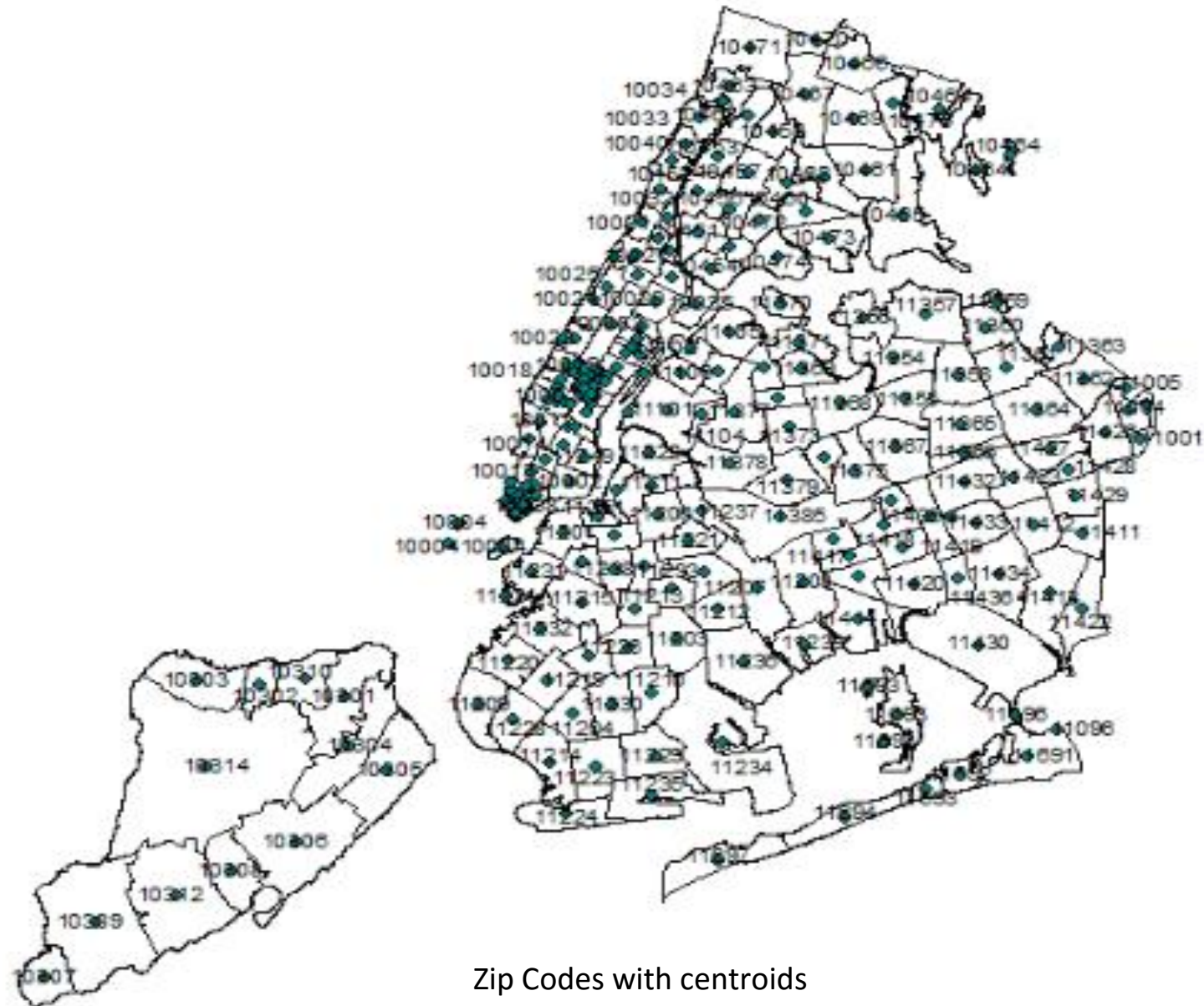
- 328 Murders
- 1120 Rapes
- 19500 Robberies
- 140000 Thefts

DATA

Data	Definition	Granularity
Crime Statistics ^[1]	Data about Crime in NYC	By Precinct
NYC Precinct ^[2]	NYC area divided according to Police Stations Jurisdiction	ShapeFile
Race, Income ^[3]	Demographic data for NYC	Census Tract
Age, Gender ^[4]	Demographic data	By Zip Code
Schools ^[5]	Point Locations of Schools in NYC	By Zip Code

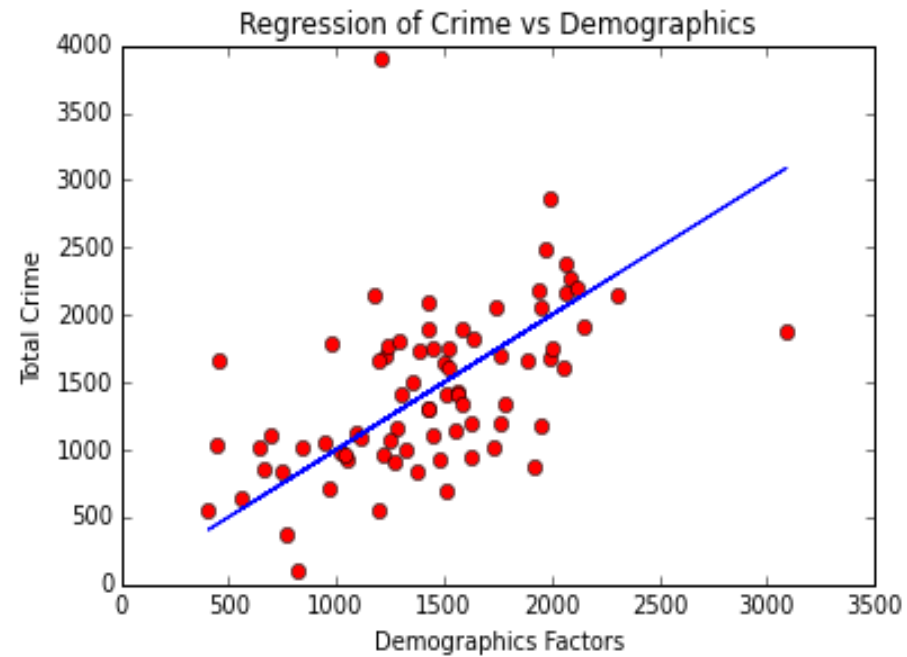
DATA MUNGING

- Mismatch in geographical divisions of different data sets.
 - Precincts, Census Tracts, Zip Codes
- ArcGIS, Python
- Approaches
 - Intersection
 - Centroids and spatial join



Zip Codes with centroids

ANALYSIS



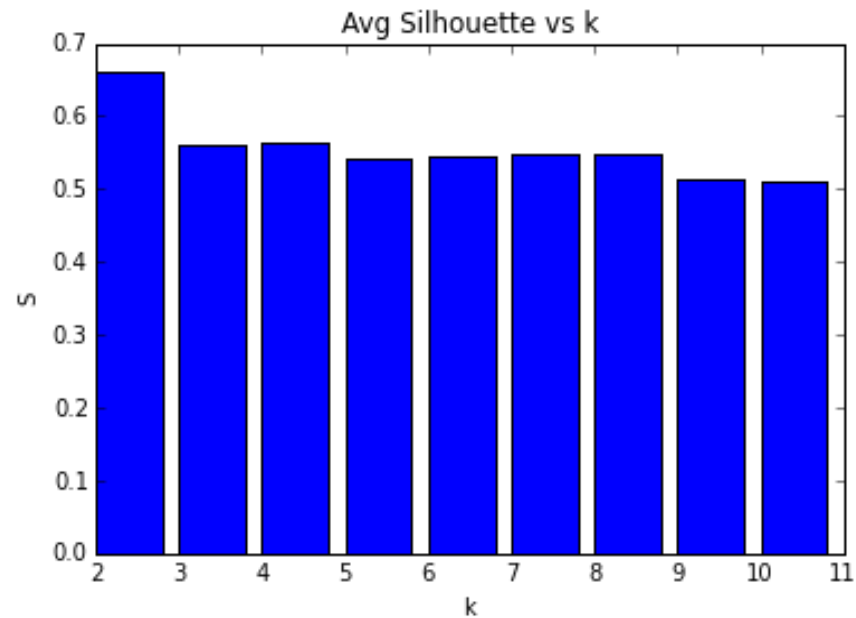
- **Multivariate regression**
- Low p-values
- R-squared of 0.573 on validation set compared to 0.510 on training set.

ANALYSIS

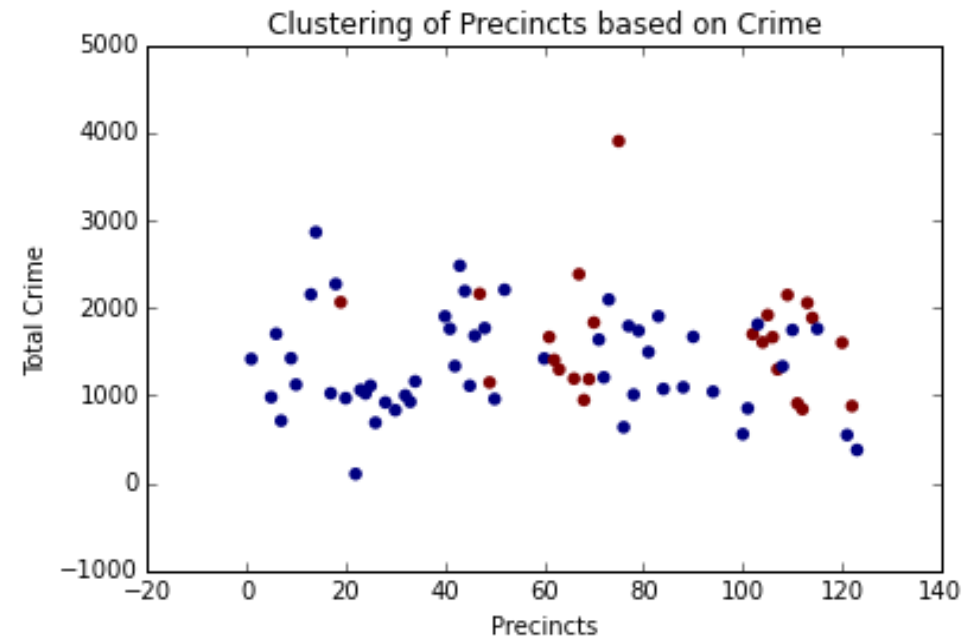
- **Feature selection (forward-stepwise)**
- Total population, number of women, white people, Asians and Native Hawaiians
- People falling under these categories need not be perpetrators of crime but also (and most probably) victims of crime.

ANALYSIS

Outputs of K-means clustering:



No clear visual distinction



PRINCIPAL COMPONENT ANALYSIS

Highest
impact

Names	Coefficients
Total Population	1.03041301e-07
Number of Men	2.42203284e-06
Number of Women	-8.75917207e-03
Whites	7.31023197e-02
Blacks	5.87278259e-01
American Indians	2.18316170e-01
Asians	-1.22553177e-02
Native Hawaiians	-4.20917011e-01
Others	-2.34135769e-01
Men below 25	6.04695847e-01
Men between 25 -70	-6.36243539e-02
Women below 25	-1.12106425e-02
Women between 25-70	-4.75588920e-03
Mean Income	5.21946758e-03
Median Income	-2.74243175e-04
Number of Schools	3.73161668e-05

CONCLUSION

- Demographic factors play a role.
- Higher the minority population, greater the crime.
- K-means clustering was inconclusive.

DATA SOURCES

- [1] “Crime Statistics⁴” NYPD (2010), available at http://www.nyc.gov/html/nypd/html/analysis_and_planning/historical_nyc_crime_data.shtml
- [2] “NYC Precinct shapefile¹”,(2010), available at http://www.nyc.gov/html/dcp/download/bytes/nypp_15c.zip
- [3] “Race, Income²”,Census Data (2010), available at <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- [4] “Age, Gender³”, Census Data(2010), available at <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- [5] “Number of Schools⁵” New York Op10ern Data (2010), available at <https://data.cityofnewyork.us/Education/School-Point-Locations/jfju-ynrr>