By: Paul Jarymowycz

SAVI 780 – Introduction to Interactive Web Mapping, Programming, and Design

Fall 2018

RACIAL BIAS IN NYC: DRUG ENFORCEMENT

The Issue

- Racial bias in policing is not a new issue
  - Can often be difficult to root-out
  - Engrained not only in culture, but also in laws and policies
- Bias is often denied
  - Racial discrepancies are blamed on other factors
  - Limited data availability for analysis
    - Released data often initially screened by police departments

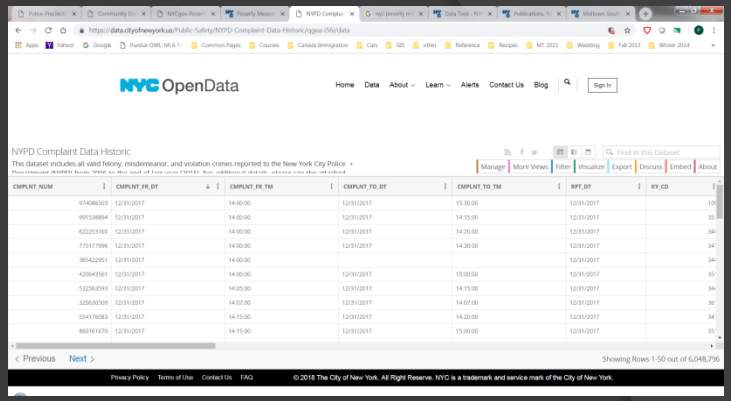
The Project Idea

- Choose a focal issue
  - Commonly believed to be racially biased
  - Available data
  - Documented police opinion
- Quality of Life (Broken Windows) policing in New York City

The Project Idea

- Choose aspect of QoL policing for study
  - Drug Enforcement in NYC
    - Often believed to be racially biased
    - Good data sources for analysis and comparison
- NYPD issued a report in 2015
  - Broken Windows and Quality of Life Policing in New York City
  - Claims other factors for perceived racial bias
    - Factors can be examined in project

Getting to Work



- Data Sources
  - All data is from 2014 to align with data in NYPD report
  - NYC Open Data
    - Map polygons
    - 311 data, NYPD Complaint data
  - Other NYC Sources
    - NYPD stats webpage – drug and “stop & frisk” data
    - NYC Opportunity – poverty data

Getting to Work

- Data Sources
  - SAMHSA – Substance Abuse and Mental Health Services Administration
    - 2014 National Survey on Drug Use and Health

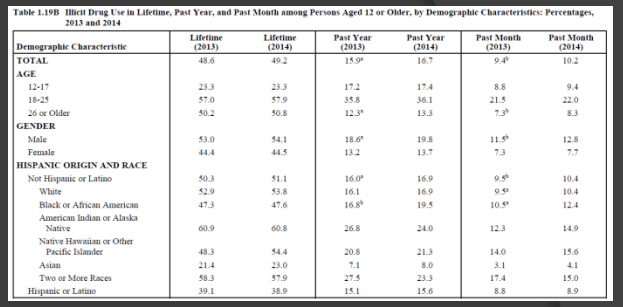


Table 1.19B Illicit Drug Use in Lifetime, Past Year, and Past Month among Persons Aged 12 or Older, by Demographic Characteristics: Percentages, 2013 and 2014

Demographic Characteristic	Lifetime (2013)	Lifetime (2014)	Past Year (2013)	Past Year (2014)	Past Month (2013)	Past Month (2014)
TOTAL	48.6	49.2	15.9[a]	16.7	9.4[b]	10.2
AGE						
12-17	23.3	23.3	17.2	17.4	8.8	9.4
18-25	57.0	57.9	35.8	36.1	21.5	22.0
26 or Older	50.2	50.8	12.3[a]	13.3	7.3[b]	8.3
GENDER						
Male	53.0	54.1	18.6[a]	19.8	11.5[b]	12.8
Female	44.4	44.5	13.2	13.7	7.3	7.7
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	50.3	51.1	16.0[a]	16.9	9.4[b]	10.4
White	52.9	53.8	16.1	16.9	9.5[a]	10.4
Black or African American	47.3	47.6	16.8[b]	19.5	10.5[a]	12.4
American Indian or Alaska Native	60.9	60.8	26.8	24.0	12.3	14.9
Native Hawaiian or Other Pacific Islander	48.3	54.4	20.8	21.3	14.0	15.6
Asian	21.4	23.0	7.1	8.0	3.1	4.1
Two or More Races	58.3	57.9	27.5	23.3	17.4	15.0
Hispanic or Latino	39.1	38.9	15.1	15.6	8.8	8.9

  - Demographic Data (Census)
    - American FactFinder
      - 2014 5-Year American Community Survey

NYCgov Poverty By Community District/Neighborhood
Total NYC Population
(Numbers are Percent of the Population)

Community District/Neighborhood	2012-2016
Bronx 1 & 2 (Hunts Point, Longwood & Melrose)	29.3
Bronx 3 & 6 (Belmont, Crotona Park East & East Tremont)	30.8
Bronx 4 (Concourse, Highbridge & Mountn Eden)	32.3
Bronx 5 (Morris Heights, Fordham South & Mount Hope)	34.4
Bronx 7 (Bedford Park, Fordham North & Norwood)	26.4
Bronx 8 (Riverdale, Fieldston & Kingsbridge)	15.2
Bronx 9 (Castle Hill, Clason Point & Parkchester)	26.4
Bronx 10 (Co-op city, Pelham Bay & Schuylerville)	14.0
Bronx 11 (Pelham Parkway, Morris Park & Laconia)	20.5
Bronx 12 (Wakefield, Willamsbridge & Woodlawn)	23.2
Brooklyn 1 (Greenpoint and Williamsburg)	17.3
Brooklyn 2 (Brooklyn Heights and Greenpoint)	12.1
Brooklyn 3 (Bedford-Stuyvesant)	22.6
Brooklyn 4 (Bushwick)	25.1
Brooklyn 5 (East New York & Starrett City)	29.8
Brooklyn 6 (Park Slope, Carroll Gardens & Red Hook)	9.5
Brooklyn 7 (Sunset Park & Windsor Terrace)	29.4
Brooklyn 8 (Crown Heights North & Prospect Heights)	21.4
Brooklyn 9 (Crown Heights So., Prospect Lefferts & Wingate)	22.1

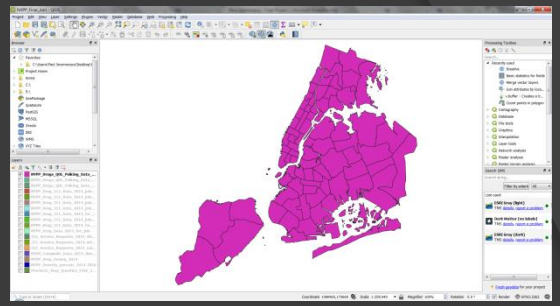
Map Design

- Design Idea: Race Clouds the Issue
- Overview:
  - Split all data by police precincts
  - Color polygons by desired factor
  - Overlay demographics to subtract color
    - Allow comparison with/without demographics

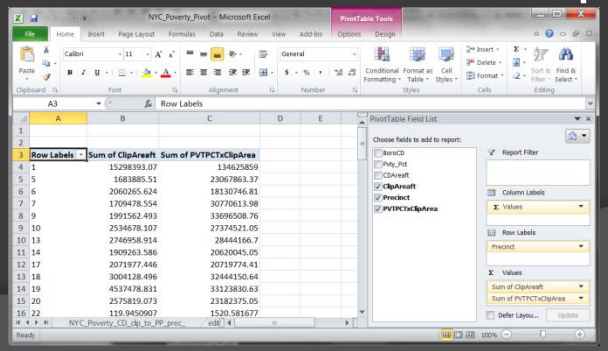
Aligning the Data

- Most difficult part of the project
- Data Analysis was performed in QGIS
- Point Data: 311, Complaint
  - Count Points in Polygon
- Join Data: Drug Crime, Stop & Frisk
  - Initially cleaned in Excel
    - Relevant data isolated
    - Computed sum by precinct in pivot table, if necessary
  - Directly joined to precincts

Aligning the Data



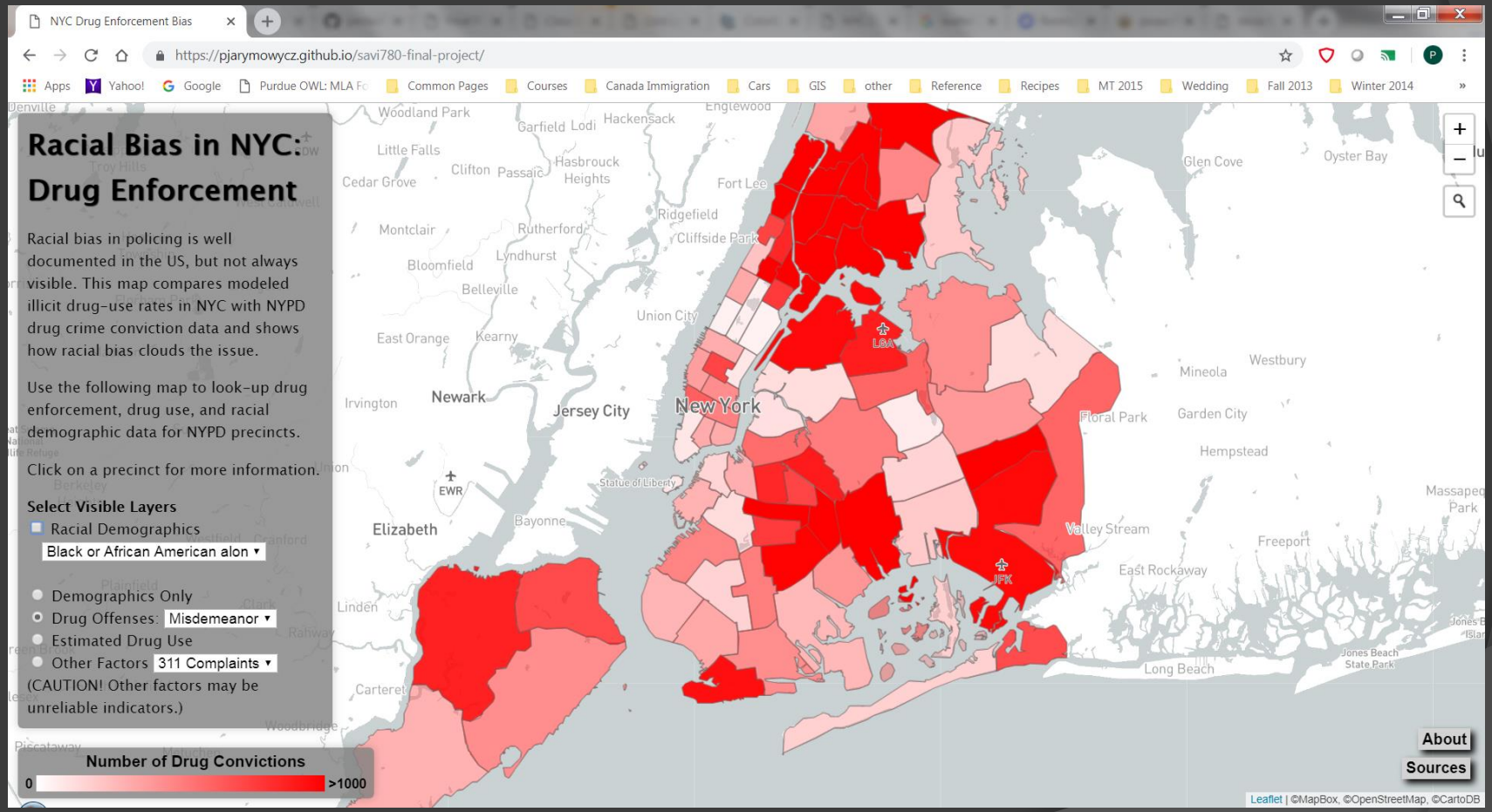
- Data in different areas (demographic, poverty)
  - Census Tracts and Community Districts
  - Further analysis required
    - Areas clipped by precinct boundaries
    - Clips merged back into a single layer
    - Precinct boundaries used to join precinct number to clips
    - Attribute tables exported as CSV and imported into Excel
    - Pivot table computed demographics in each precinct
      - Sum of demographic total of each clip in each precinct
      - Multiplied by ratio of clip size per precinct vs original clip size
    - Demographics joined back to police precincts
- All data was joined into 1 file and exported as geoJSON



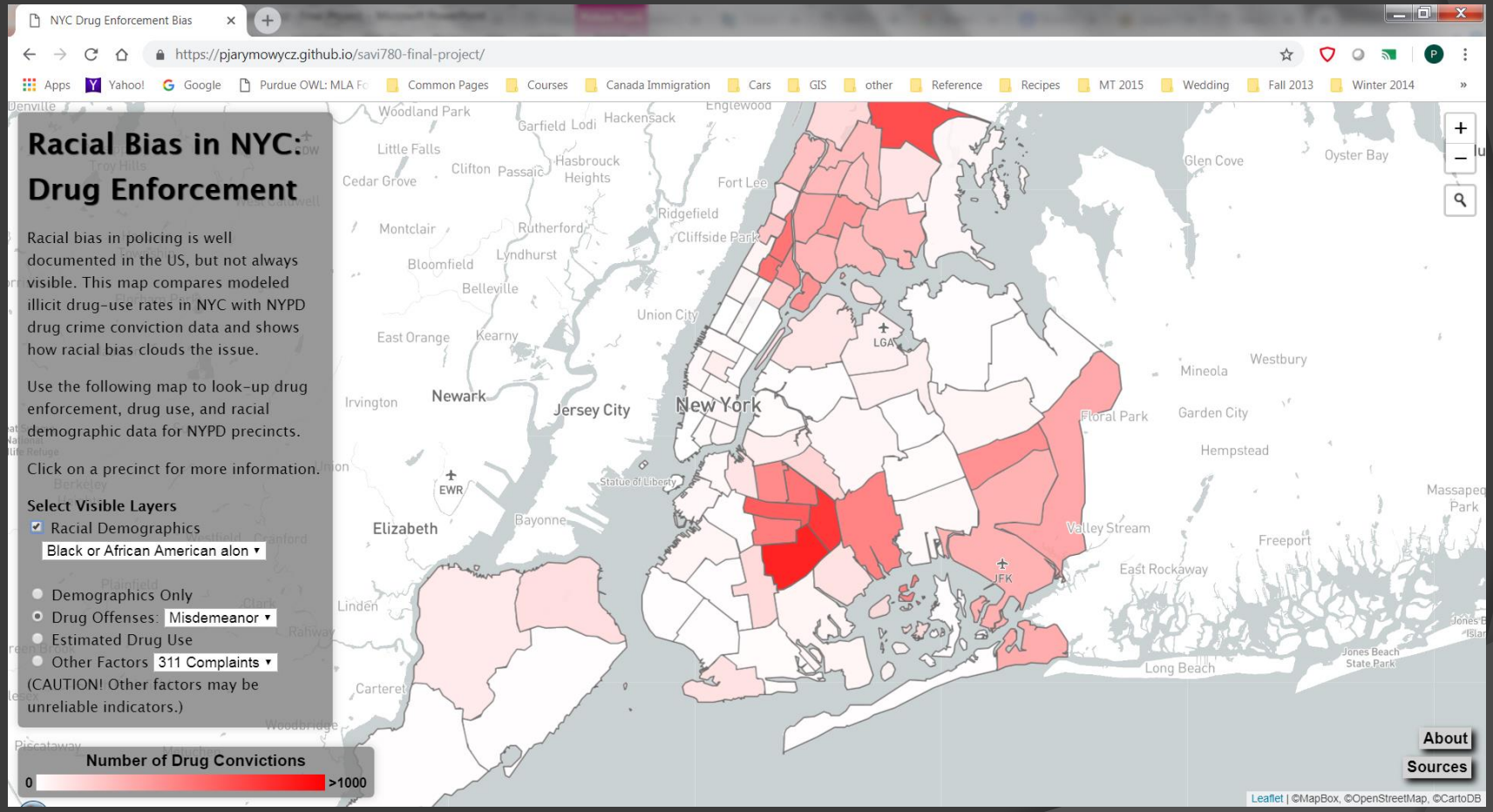
Mapping the Data

- A white basemap was created in MapBox
  - Minimize distraction and create contrast
- Colors chosen for data values (ColorBrewer)
- geoJSON size minimized with mapshaper
- Different layers created for each dataset

Mapping the Data



Mapping the Data



Mapping the Data

- Some issues
  - Created custom layer selector
    - Leaflet layers control has very limited functionality
    - Add-ons were not found to work adequately
    - Allowed use of custom layer groups
  - Dynamic legend
    - To prevent overcrowding on the page, the legend was designed to change with the selected data
    - Data scale was chosen to be appropriate for each dataset

What Was Learned

- Data analysis techniques
  - Grouping and summation with pivot tables
- Color schemes
  - Using basemap as part of the overall color scheme
- Grouping layers for display together
- Use of various event listeners
- Use of other Leaflet controls
  - Layers, Legend, Zoom

Next Steps

- Dig for further data
  - 911 data is available by law, but often requires special requests
  - New data coming out soon
    - Subway fare evasion (turnstile jumping)
  - Refine datasets that have racial data connected
    - ACS data connects to poverty data
      - Can recalculate using NYC poverty factors
    - Stop & Frisk has racial data included in dataset
      - Create map comparing racial demographics of a precinct to demographics of Stop & Frisk incidents

Thank You!

- Questions?
- Map Link: https://pjarymowycz.github.io/savi780-final-project/