airbnb in NYC

A REEXAMINATION OF A DOMINATING BUSINESS

THROUGH VARIOUS FREE AND OPEN SOURCE GIS SOFTWARE

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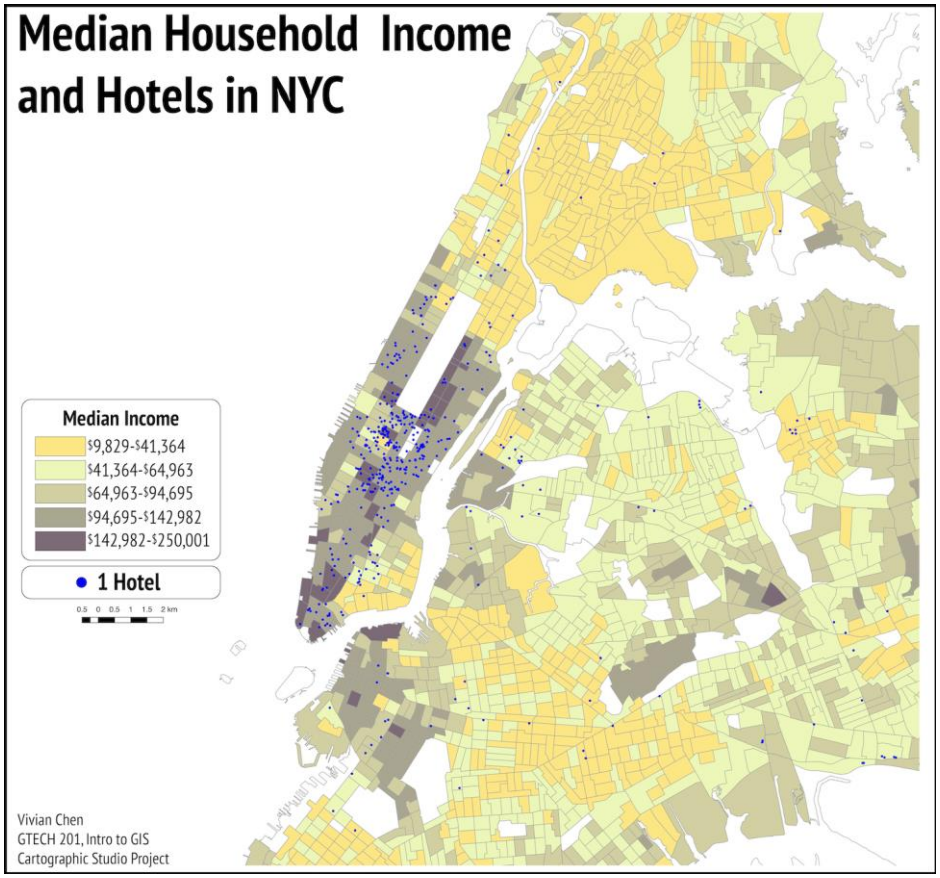
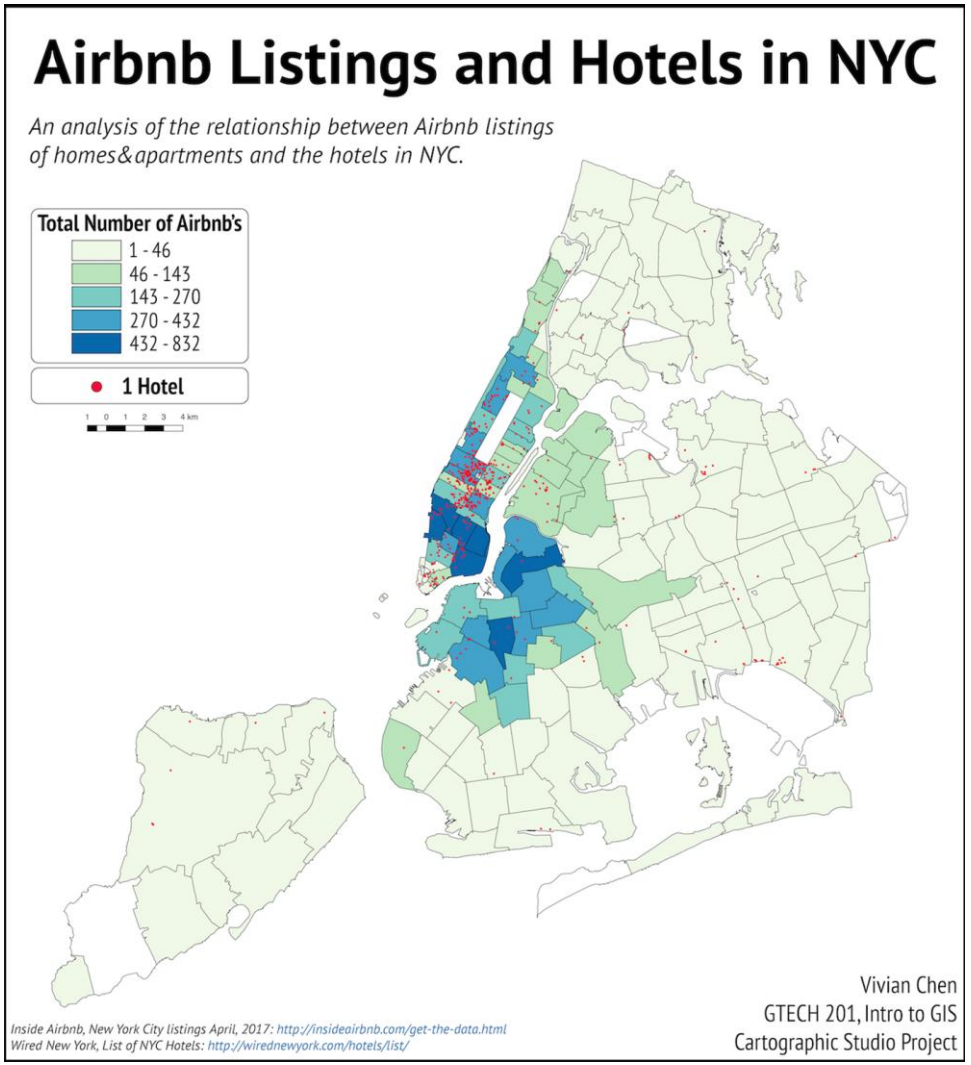
GTECH 38517, FOSS

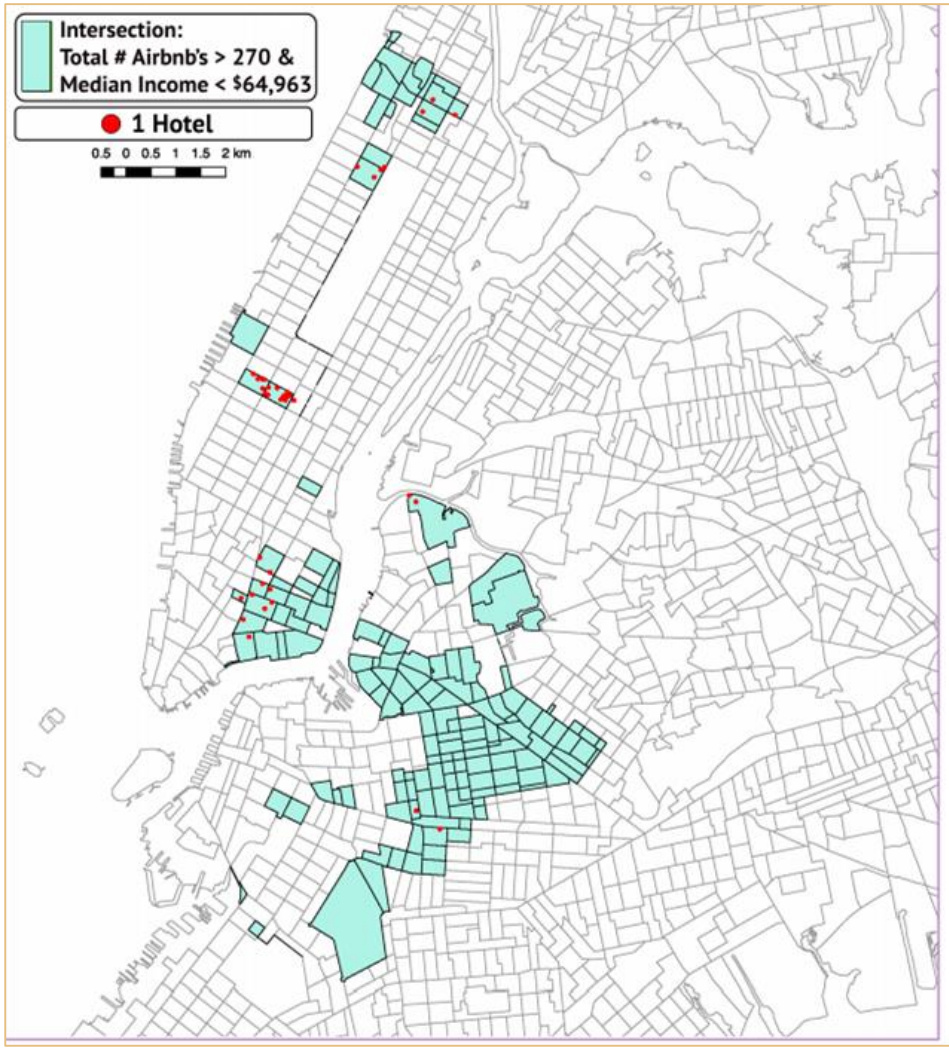
Dr. Shipeng Sun, Fall 2018

What is the relationship between the distribution of hotels and Airbnb rentals in New York City?





Airbnb & Hotel Data from March 2017



Intersection (A n B)

(A) # Airbnb's: 270 – 832

(B) Median Inc.: $9,829 – $64,963

 # Hotels: 44 Hotels → 8.5%

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- 10036: 22 hotels
- 10002 & 10003: 10 hotels
- Brooklyn: 4 hotels

Airbnb & Hotel Data from March 2017

Research Topic/Question

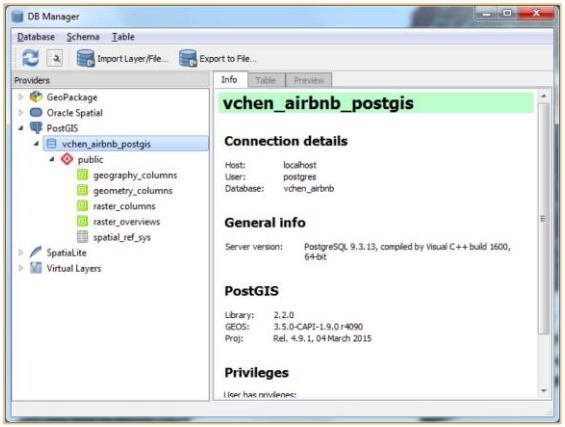
What is the relationship between the distribution of Airbnb listings and median household incomes in NYC?

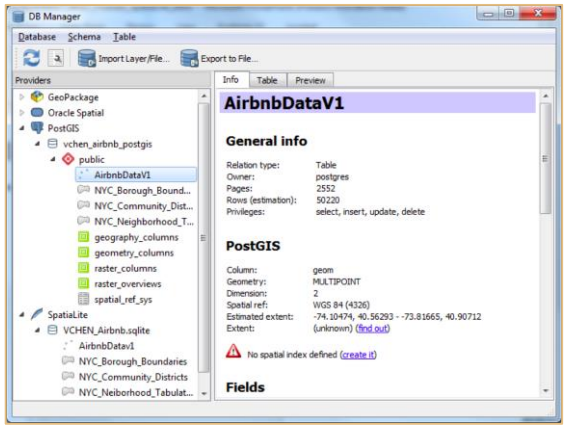
Data

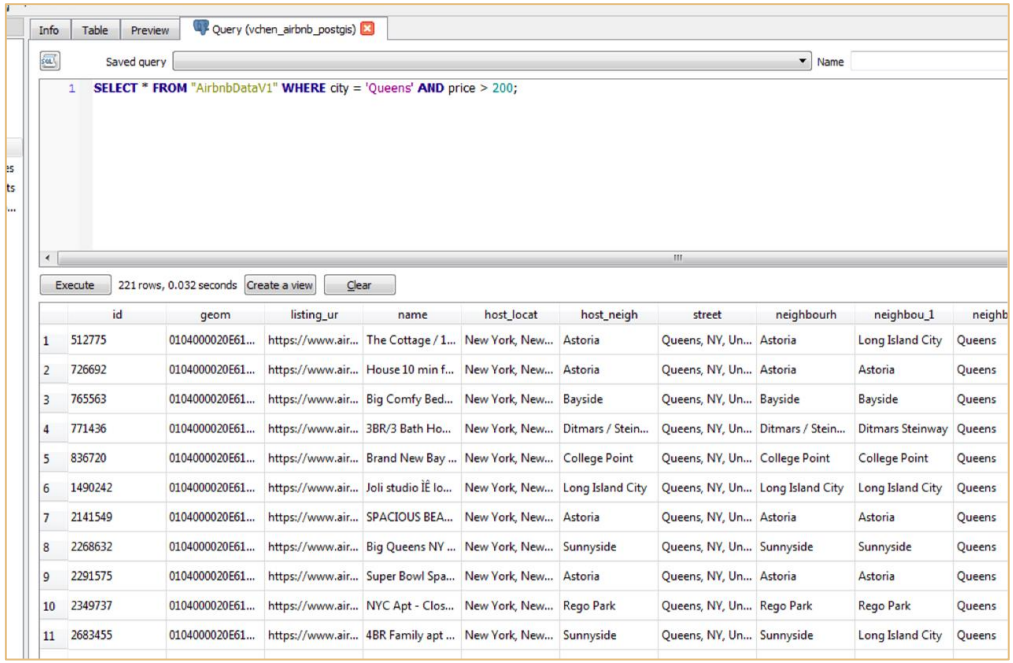
Item Name	Notes	Format	Source
Airbnb Listings 10/07/2018	Tabular data of all Airbnb listings as of October 7, 2018 with Lon/Lat Coordinates	CSV file	Inside Airbnb – Get the Data
AirbnbDatav1	Point Data of Airbnb Listings 10/07/2018	Shapefile	Inside Airbnb – Get the Data
NYC Neighborhood Tabulation Areas	Polygonal boundaries of NYC neighborhood tabulation areas	Shapefile	NYC Department of City Planning
NYC Borough Boundaries	Polygonal boundaries of NYC borough boundaries	Shapefile	NYC Open Data
Median Income by NYC NTA	Polygonal boundaries of NYC census tracts containing median income data	Shapefile	U.S. Census Bureau, 2010, American Community Survey

Assignment 1: QGIS Data Loading

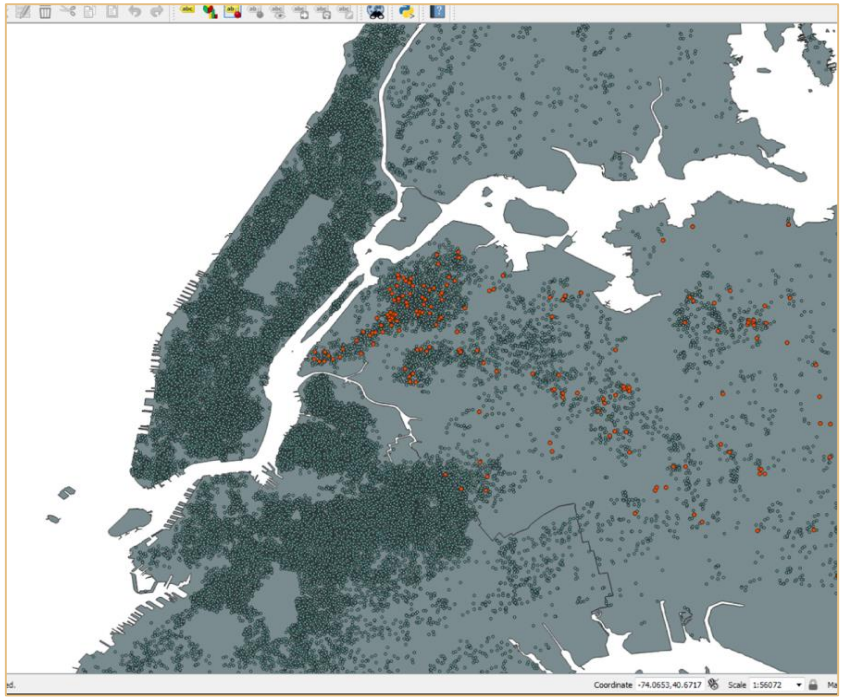
- Identify/clean data
- Load onto Spatialite, PostGIS
- Geocoded Airbnb listings
- Sampled spatial SQL queries







	id	geom	listing_ur	name	host_locat	host_neigh	street	neighbourh	neighbou_1	neighb
1	512775	0104000020E61...	https://www.air...	The Cottage / 1...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Long Island City	Queens
2	726692	0104000020E61...	https://www.air...	House 10 min f...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Astoria	Queens
3	765563	0104000020E61...	https://www.air...	Big Comfy Bed...	New York, New...	Bayside	Queens, NY, Un...	Bayside	Bayside	Queens
4	771436	0104000020E61...	https://www.air...	3BR/3 Bath Ho...	New York, New...	Ditmars / Stein...	Queens, NY, Un...	Ditmars / Stein...	Ditmars Steinway	Queens
5	836720	0104000020E61...	https://www.air...	Brand New Bay ...	New York, New...	College Point	Queens, NY, Un...	College Point	College Point	Queens
6	1490242	0104000020E61...	https://www.air...	Joli studio ÎÉ lo...	New York, New...	Long Island City	Queens, NY, Un...	Long Island City	Long Island City	Queens
7	2141549	0104000020E61...	https://www.air...	SPACIOUS BEA...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Astoria	Queens
8	2268632	0104000020E61...	https://www.air...	Big Queens NY ...	New York, New...	Sunnyside	Queens, NY, Un...	Sunnyside	Sunnyside	Queens
9	2291575	0104000020E61...	https://www.air...	Super Bowl Spa...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Astoria	Queens
10	2349737	0104000020E61...	https://www.air...	NYC Apt - Clos...	New York, New...	Rego Park	Queens, NY, Un...	Rego Park	Rego Park	Queens
11	2683455	0104000020E61...	https://www.air...	4BR Family apt ...	New York, New...	Sunnyside	Queens, NY, Un...	Sunnyside	Long Island City	Queens



Info | Table | Preview | Query (vchen_airbnb_postgis)

Saved query | Name

```
1  SELECT * FROM "AirbnbDataV1" WHERE city = 'Queens' AND price > 200;
```

Execute | 221 rows, 0.032 seconds | Create a view | Clear

	id	geom	listing_ur	name	host_locat	host_neigh	street	neighbourh	neighbou_1	neighb
1	512775	0104000020E61...	https://www.air...	The Cottage / 1...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Long Island City	Queens
2	726692	0104000020E61...	https://www.air...	House 10 min f...	New York, New...	Astoria	Queens, NY, Un...	Astoria	Astoria	Queens
3	765563	0104000020E61...	https://www.air...	Big Comfy Bed...	New York, New...	Bayside	Queens, NY, Un...	Bayside	Bayside	Queens
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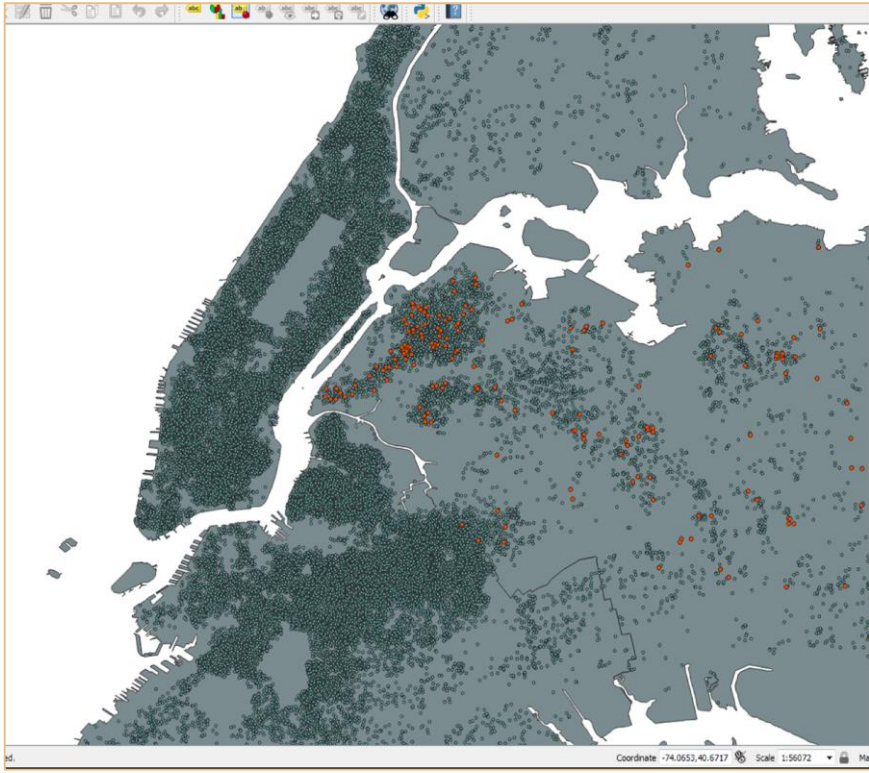
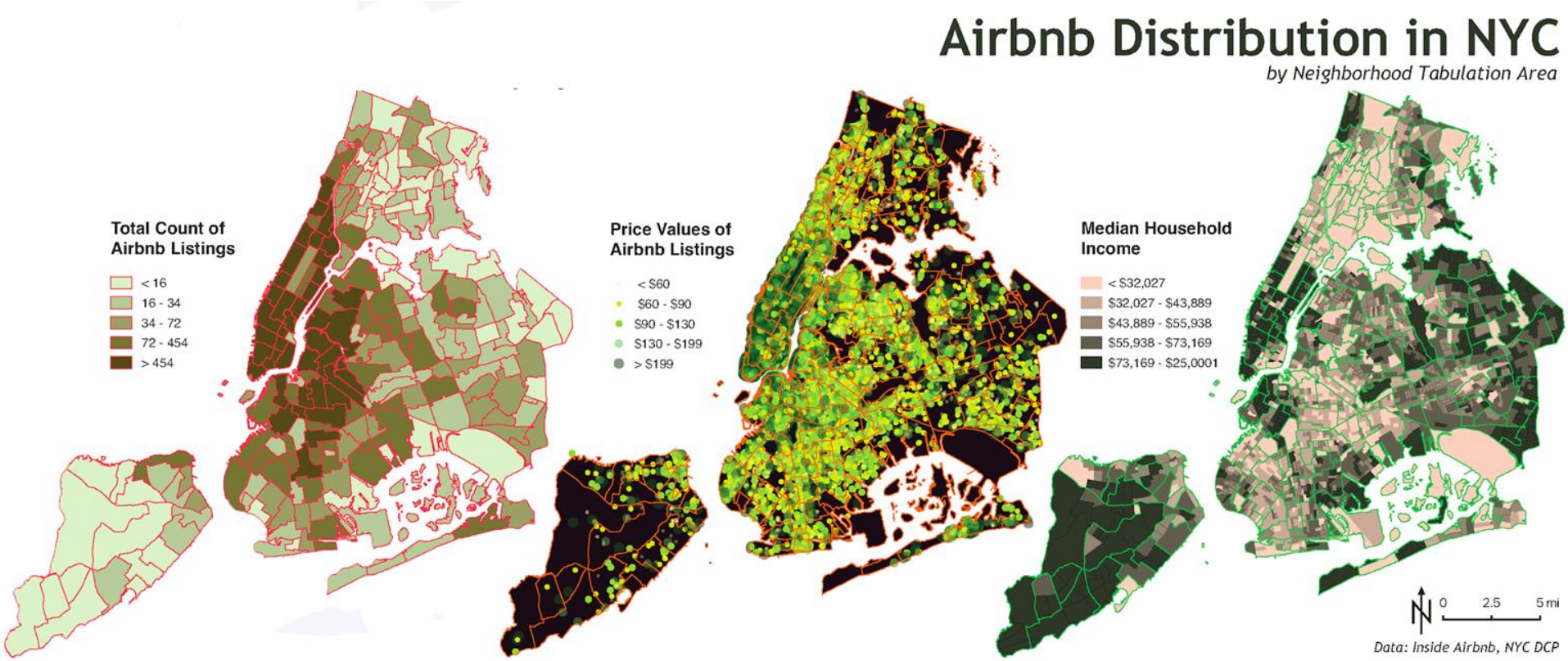


Assignment 2: QGIS Customizations



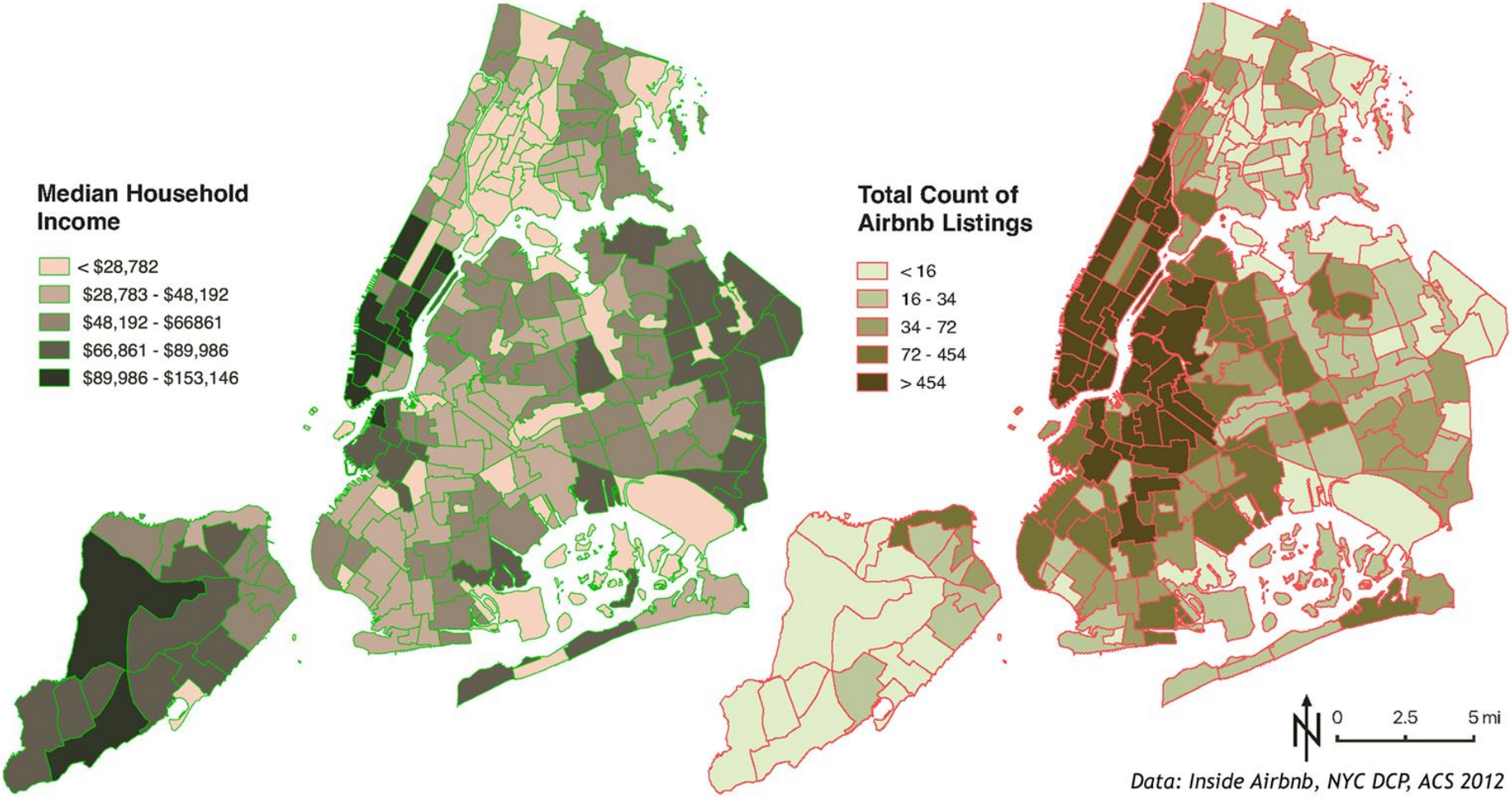
Pros:

- Easy to customize
- Can handle different file formats
- Mac-friendly

Cons:

- Like ArcMap, had to do workarounds when customizing
- Speed

```
SELECT ntacode, AVG(MHI)
FROM MHINTA
GROUP BY ntacode;
```

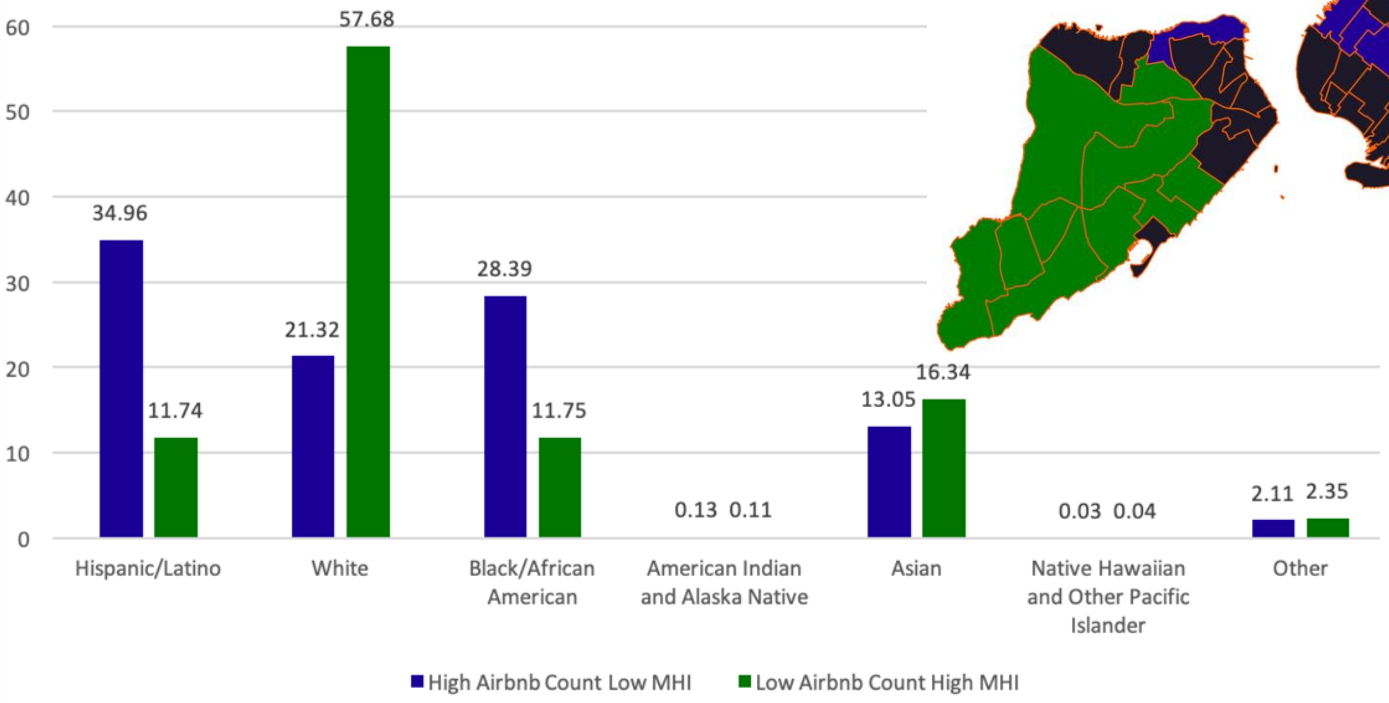


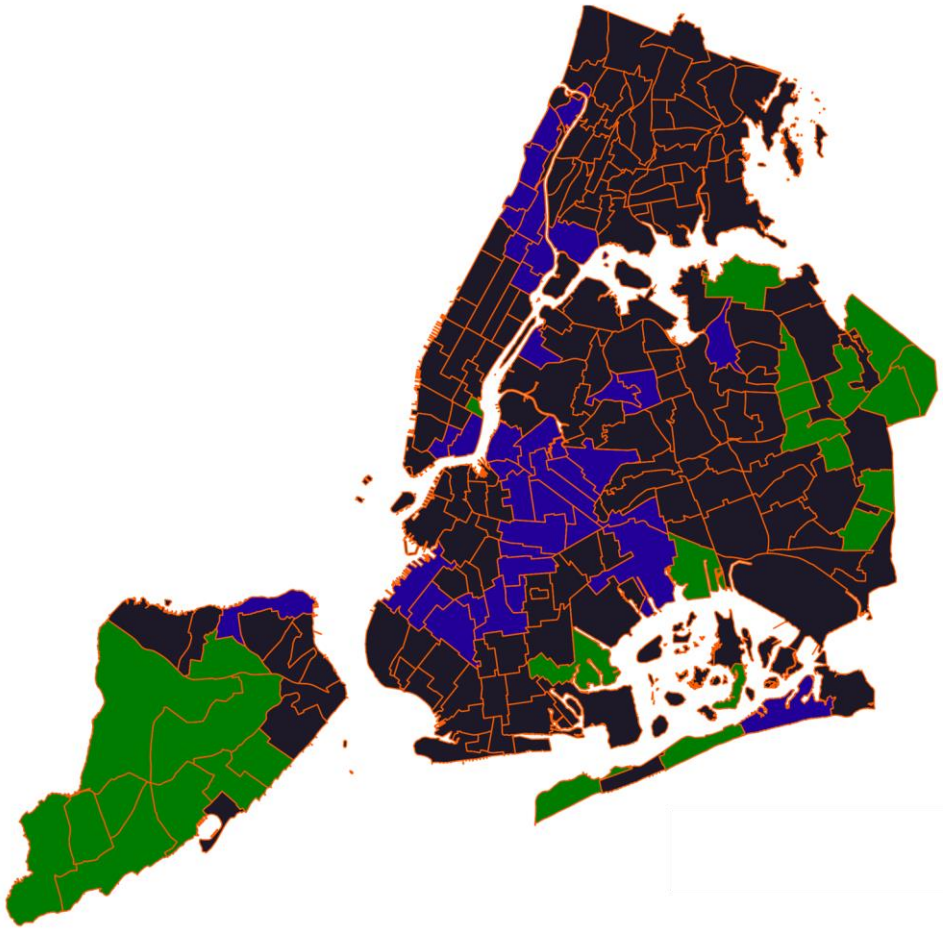
Low Airbnb Count, High MHI

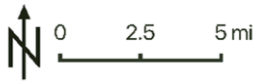
```
SELECT *
FROM CountAirbnb_MHI_NTA_NEW
WHERE (NUMPOINTS < 34 AND MHI > 66861);
```

High Airbnb Count, Low MHI

```
SELECT *
FROM CountAirbnb_MHI_NTA_NEW
WHERE (NUMPOINTS > 72 AND MHI < 48192);
```







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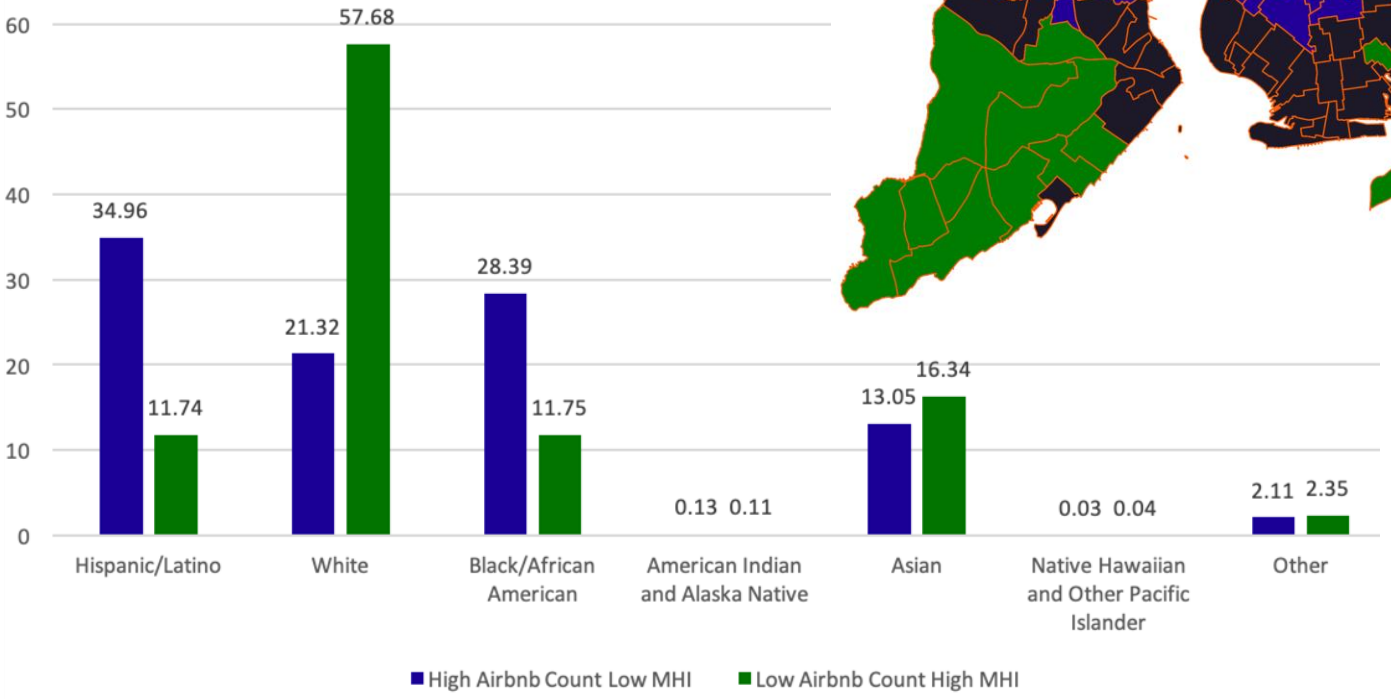
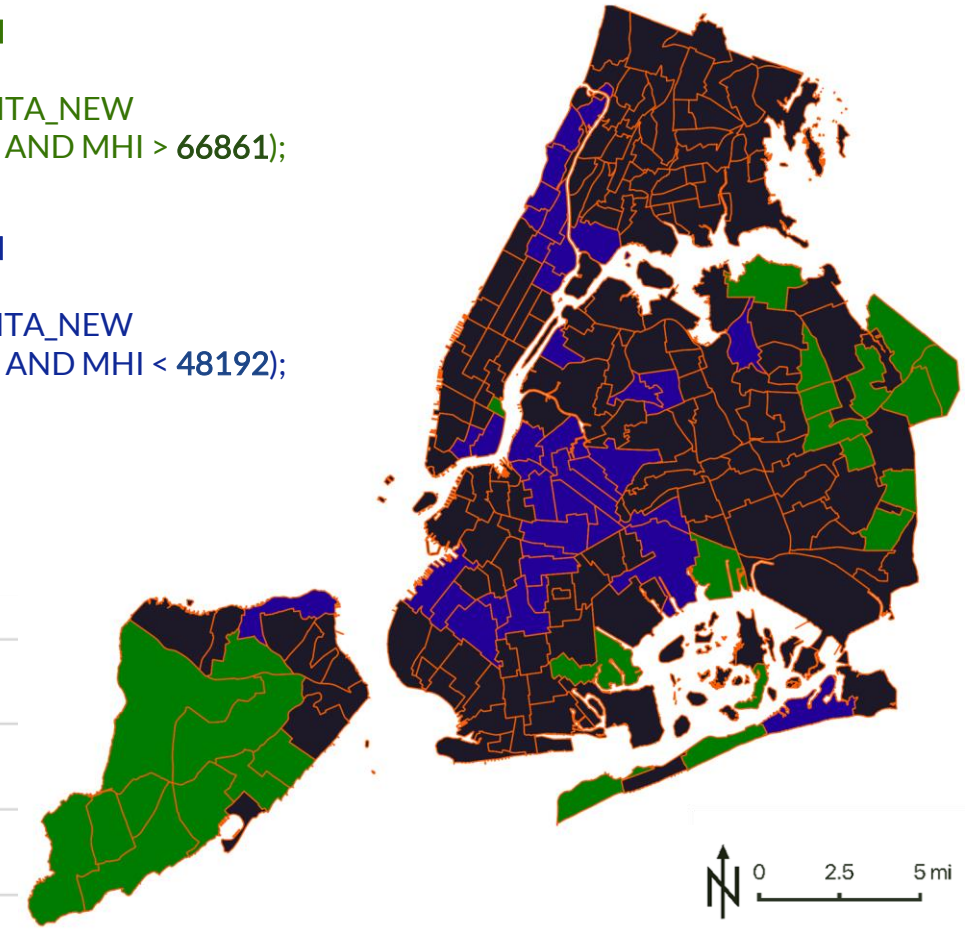
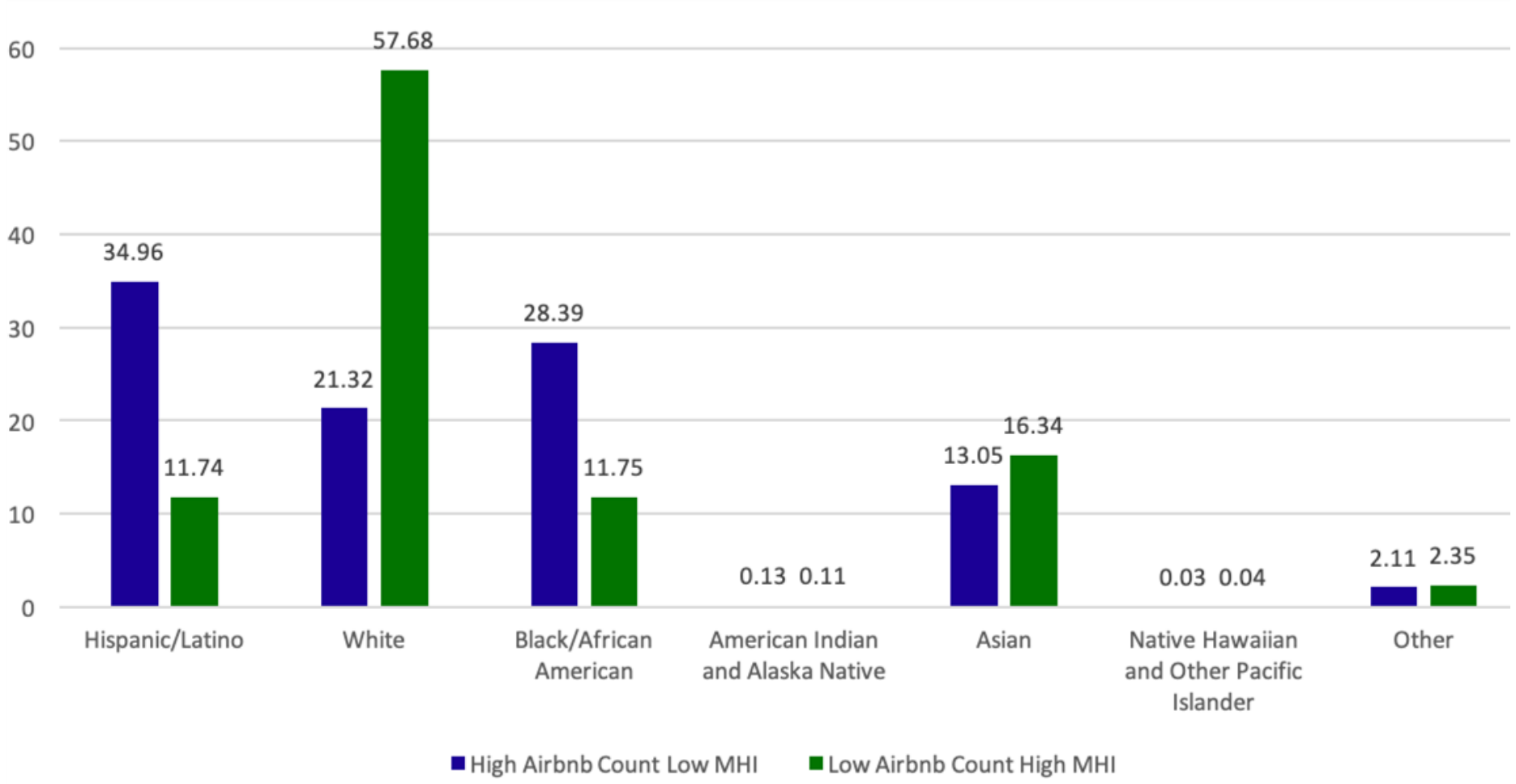
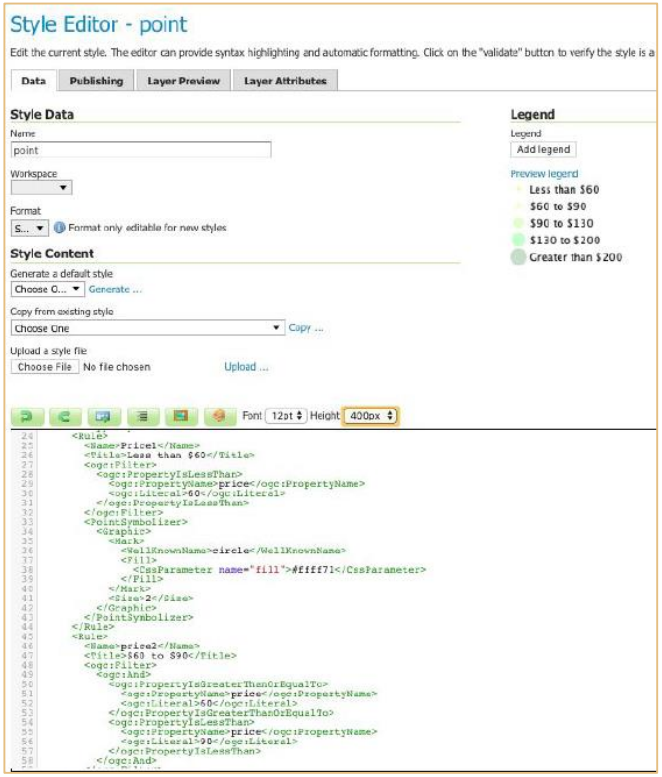
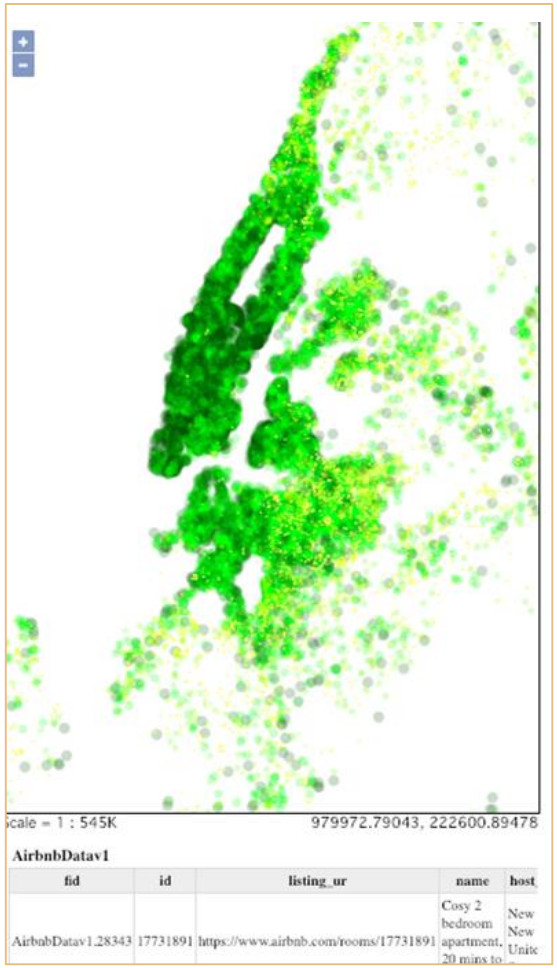





60
50
40
30
20
10
0
34.96
11.74
57.68
21.32
28.39
11.75
0.13
0.11
13.05
16.34
0.03
0.04
2.11
2.35
Hispanic/Latino
White
Black/African American
American Indian and Alaska Native
Asian
Native Hawaiian and Other Pacific Islander
Other
High Airbnb Count Low MHI
Low Airbnb Count High MHI

Assignment 3: GeoServer, GeoWebServices





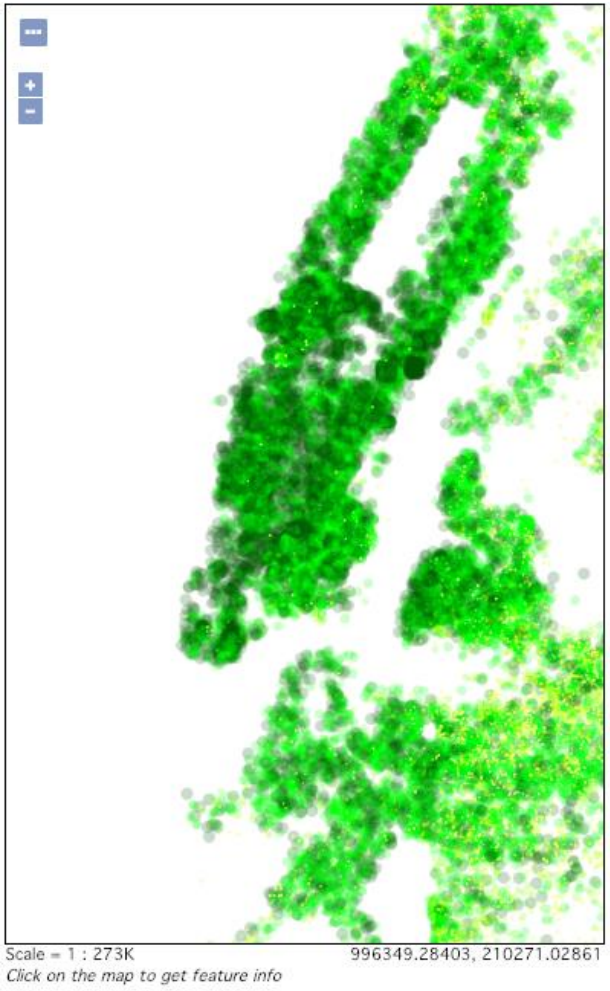
Pros:

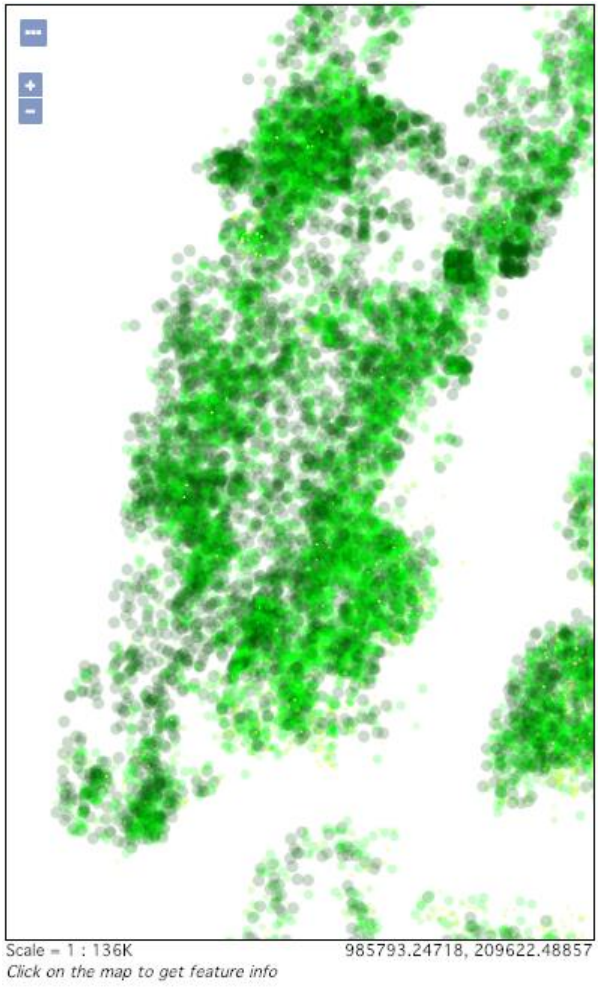
- Cool customizations with HTML
- Had to keep looking up code

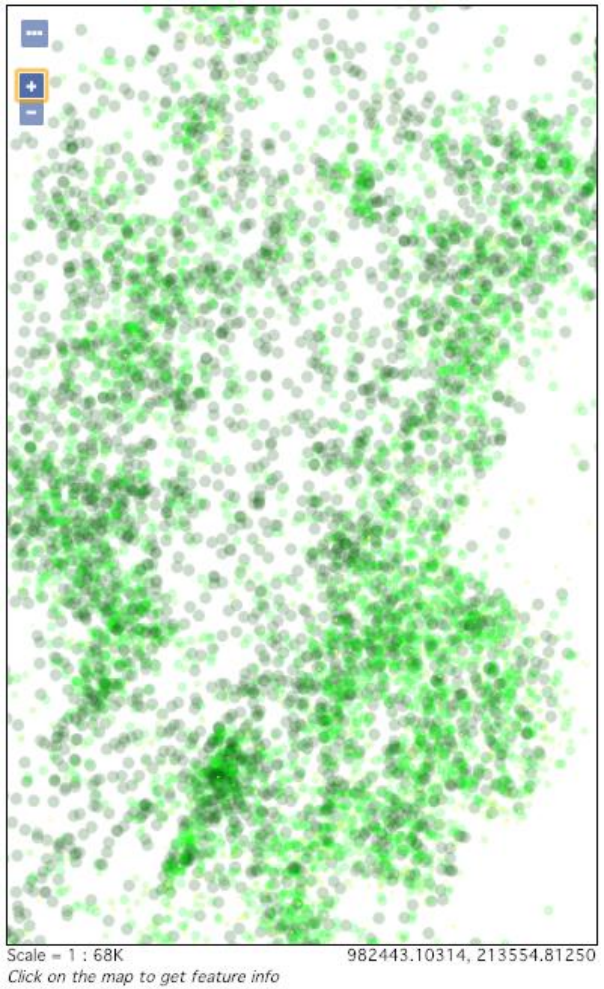
Cons:

- Was difficult connecting to GeoServer via Mac
- No live updating when customizing

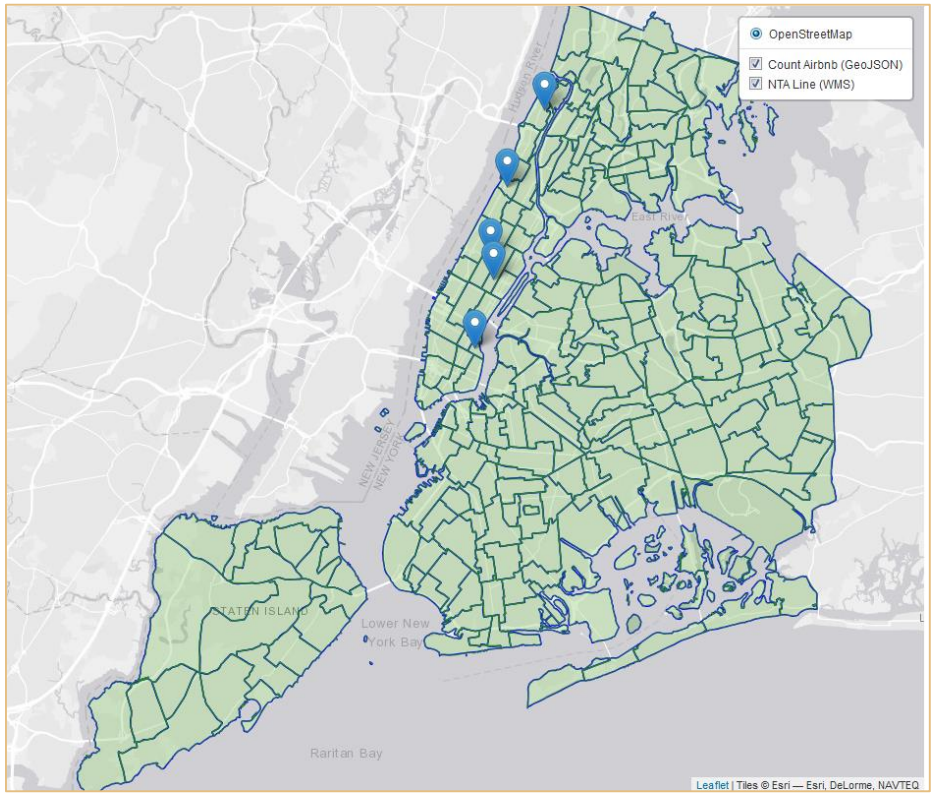
Assignment 3: GeoServer, GeoWebServices (cont.)







Assignment 4: Leaflet, WebGIS



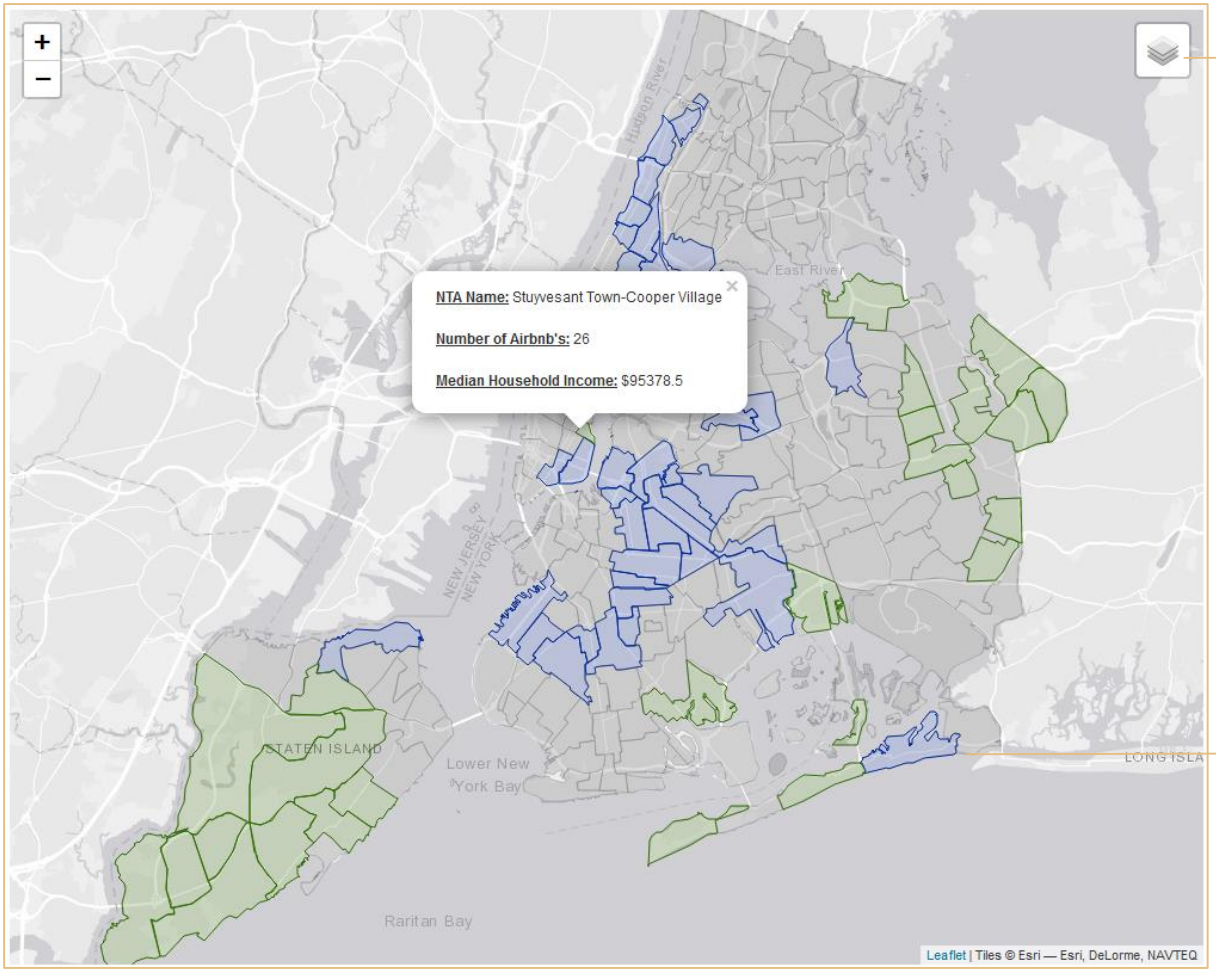
Pros:

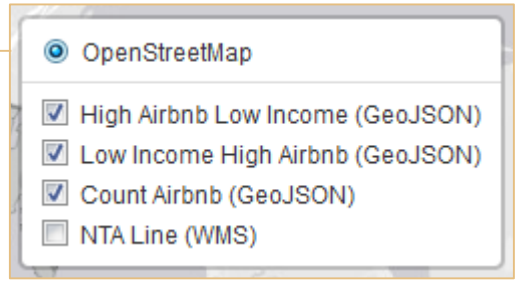
- Variety of features
- Interactive

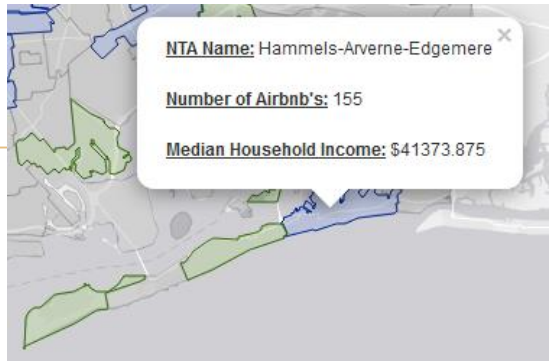
Cons:

- More time to customize (JavaScript)

Assignment 4: Leaflet, WebGIS (cont.)







Airbnb Distribution in NYC

by Neighborhood Tabulation Area