

NEW
YORK
CITY



NEW
JERSEY

HUDSON RIVER

MANHATTAN

BRONX

WESTCHESTER
COUNTY

LONG
ISLAND
SOUND

QUEENS

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Rohini Muttur
Jana Chatterjee

NASSAU
COUNTY

NYC Rentals Analysis

Project Description



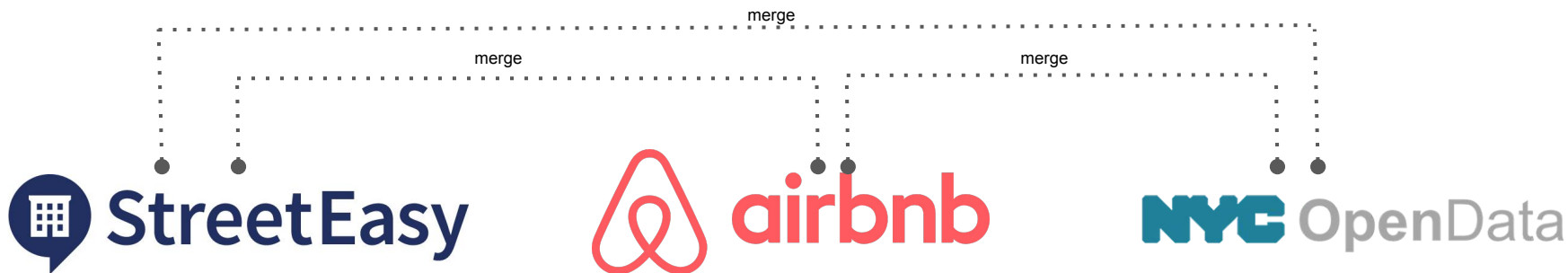
Using datasets from AirBnB, StreetEasy, and NYC Open Data, we created a multi-tiered analysis to **determine if there are similarities between short term and long-term rentals** in New York City.

Additionally, understand if the rental housing market is having an impact in societal factors.

The following **hypotheses** were considered:

- ❖ The neighborhoods with the cheapest rent will have more rental listings.
- ❖ The neighborhoods with the maximum complaints impact pricing in short and long term rentals.
- ❖ The average median price decreases as the distance from the city center increases.
- ❖ Neighborhoods offering the most amount of listings are more expensive.

Resources and Cleansing



StreetEasy has the largest set of real estate listings for New York City.

CSV

- ❖ Median Asking Price: 2010-2018
- ❖ Inventory: 2010-2018

Cleansing description:

- ❖ Remove NaN
- ❖ Standardized and renamed
- ❖ Convert non-numeric columns to numbers.
- ❖ Mapping of latitude and longitude

Airbnb is an online marketplace that connects people who want to rent out their homes with people who are looking for accommodations

CSV

- ❖ Listings for 2018
- ❖ Neighborhoods geojson

Cleansing description:

- ❖ Remove NULL values
- ❖ Standardized and filter
- ❖ Normalise columns

NYC OpenData is free public data published by New York City agencies and other partners.

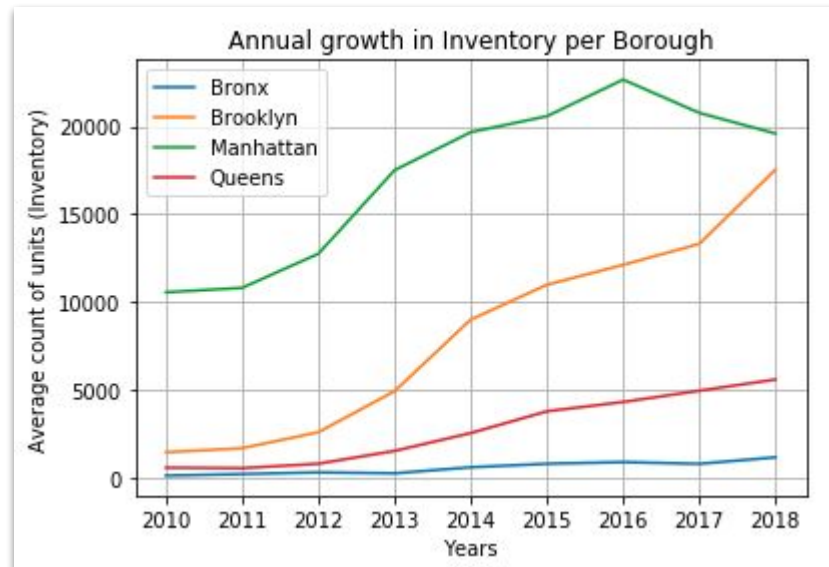
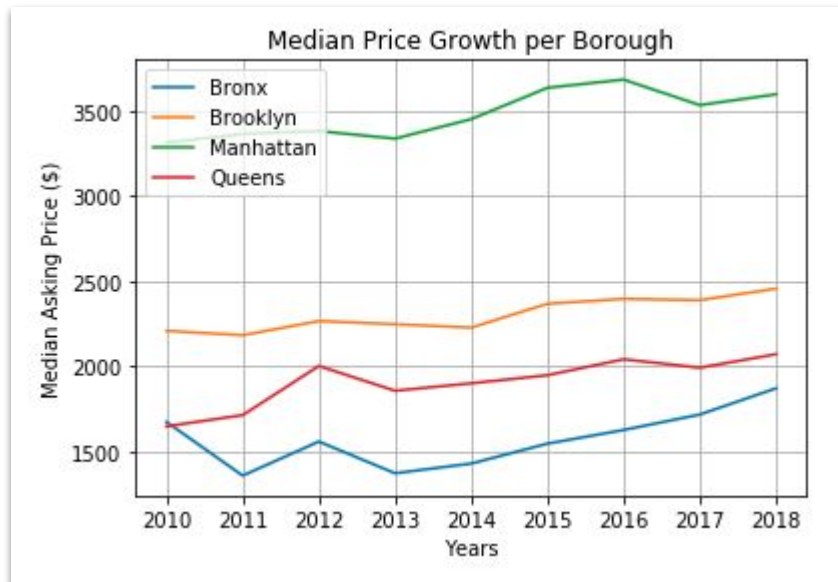
CSV

- ❖ 2018 311 Complaints by Borough

Cleansing description:

- ❖ Remove NaN
- ❖ Standardized and renamed
- ❖ Convert non-numeric columns to numbers.
- ❖ Re-writing and Merging 5 files into 1

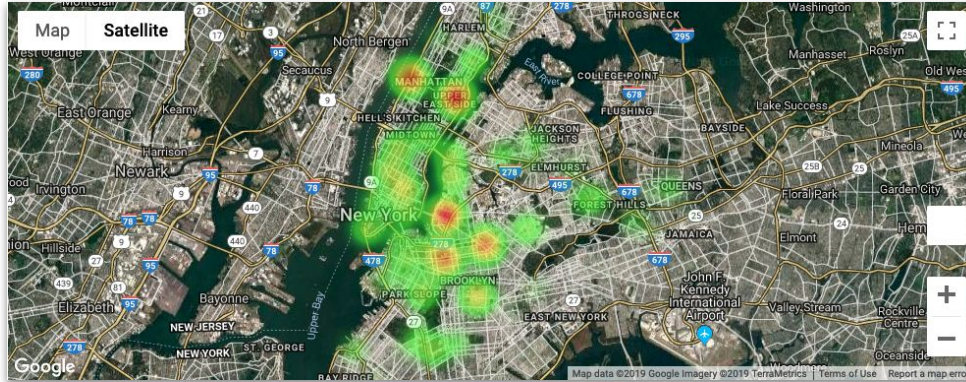
StreetEasy Data: 2010 - 2018



INSIGHT: Starting in 2016, median price rental went down for Queens and Brooklyn which might explain why the available inventory of Manhattan rentals is trending down, while Brooklyn and Queens are trending up.

StreetEasy Data: Pricing and Listing Distribution 2018

Count of Units



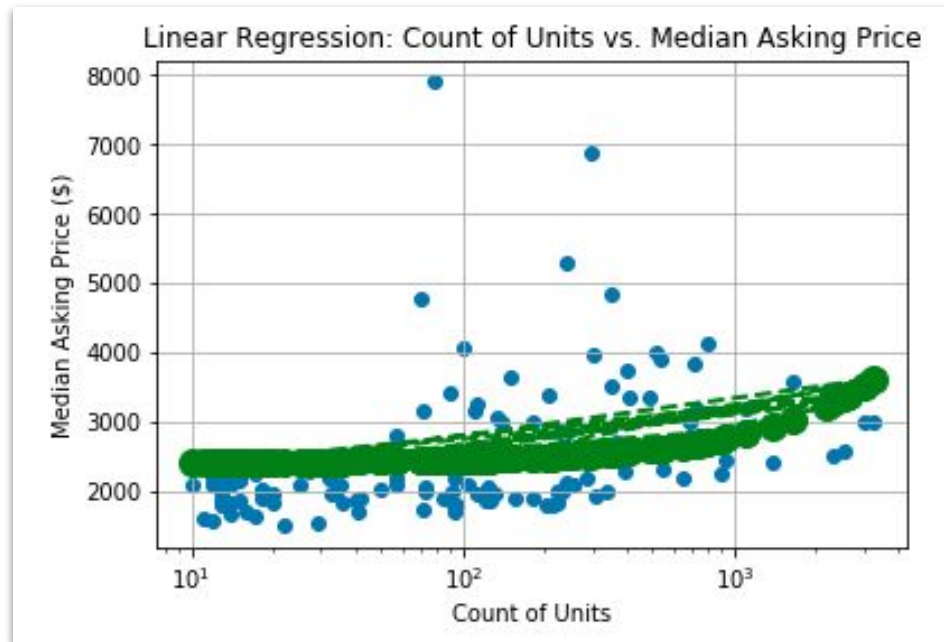
INSIGHT: There is no intersection of data between the number of units and median asking price.

Median Asking Price



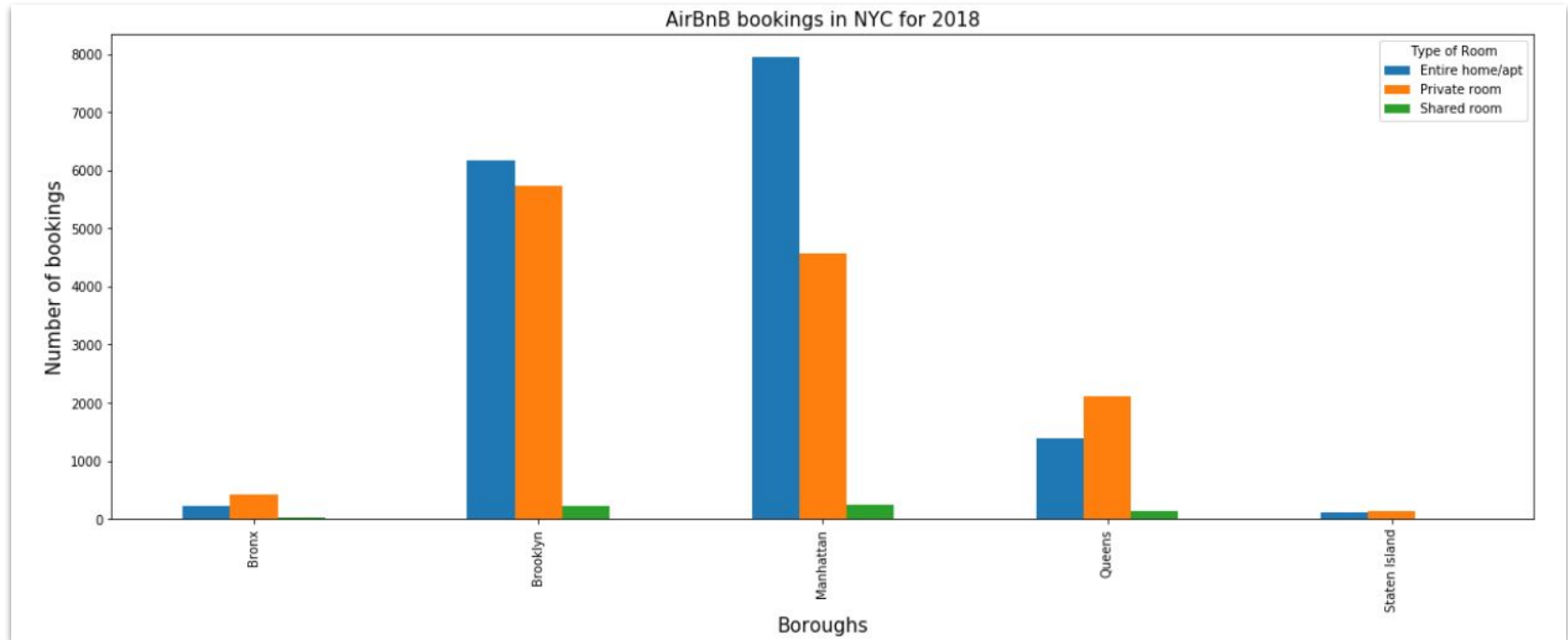
StreetEasy Data: Linear Regression

Pricing and Listing Distribution 2018



INSIGHT: The count of available units per neighborhood is not related with the Asking Median Price. The graph shows highest prices within neighborhoods having the average count of available units.

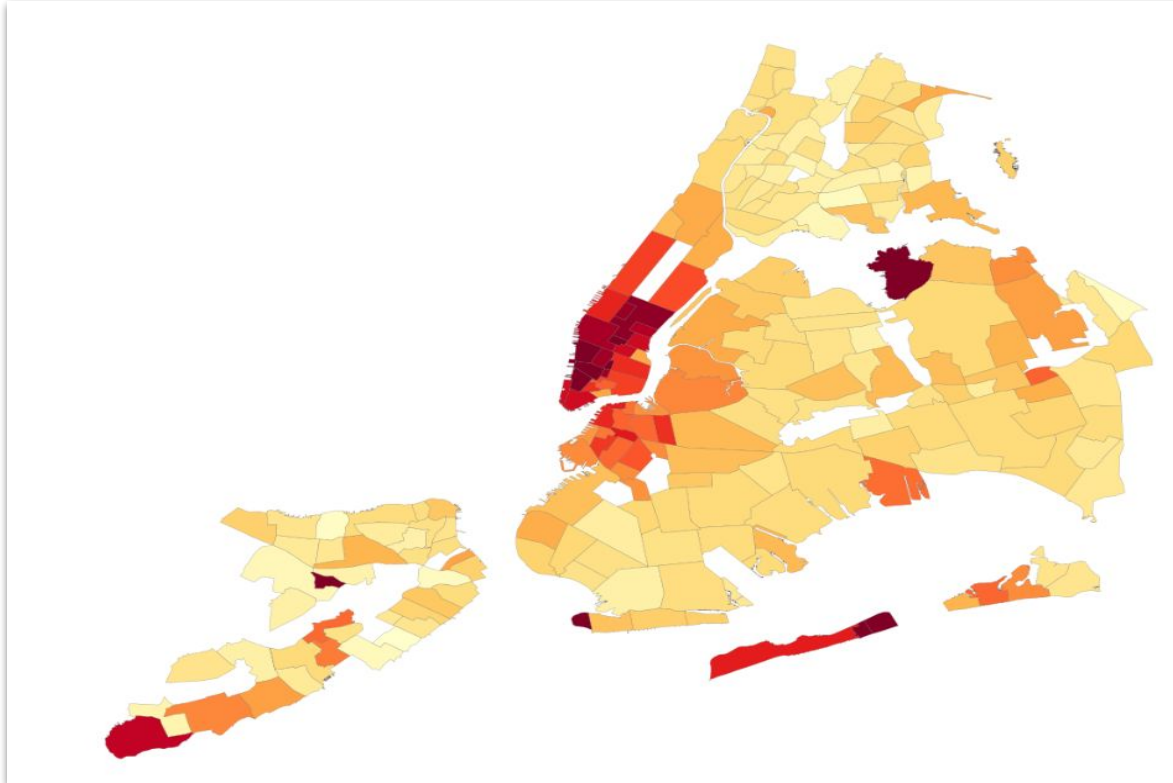
AirBnB listings in NYC 2018



INSIGHT: 1) Manhattan has the highest number of listings closely followed by Brooklyn.

2) Entire Home/Apt are the popular choices except in Queens where Private rooms are more popular.

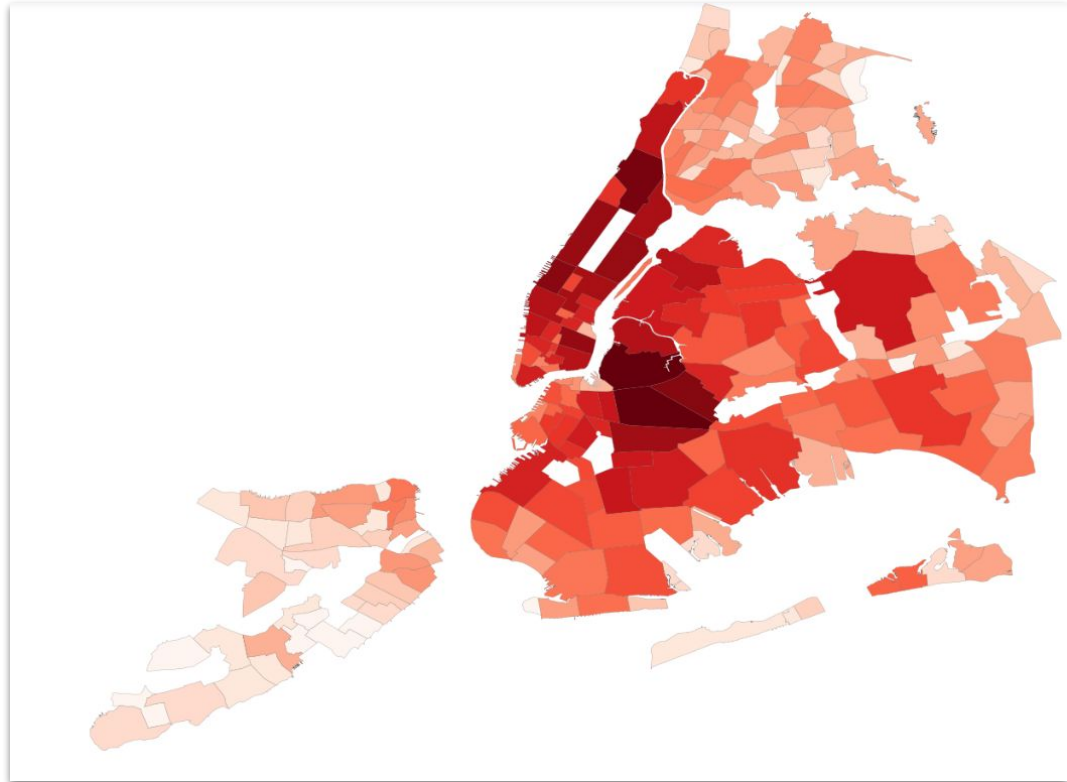
AirBnB Data: Price Wise Distributions



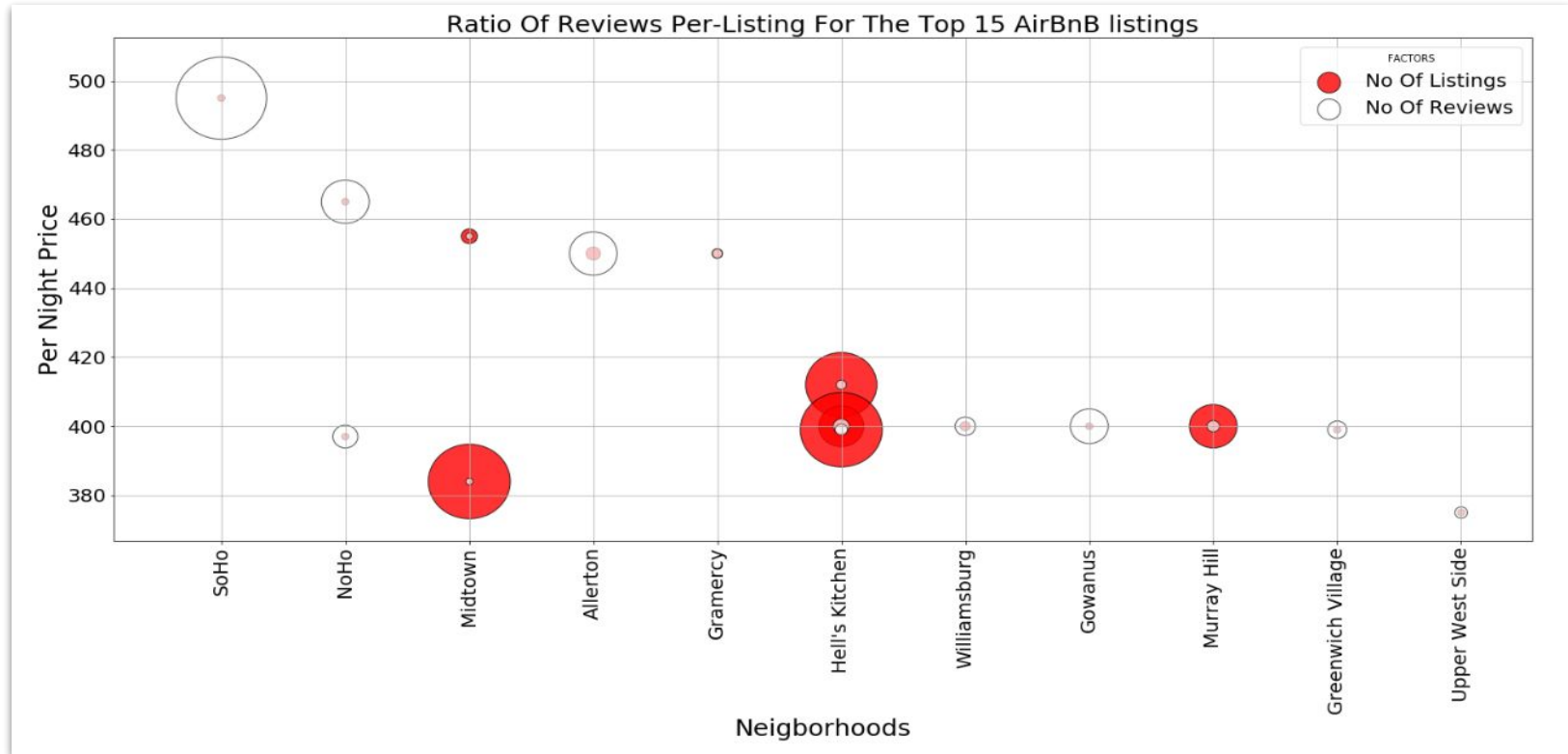
INSIGHT: Manhattan has the priciest listings followed by Brooklyn.

AirBnB Data: Listings Distribution

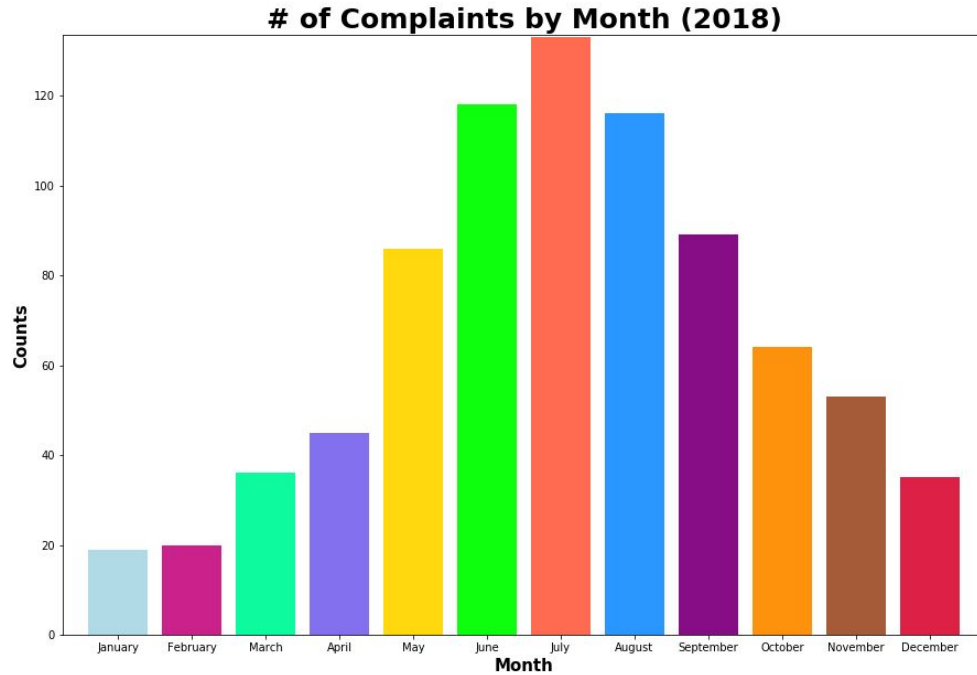
INSIGHT: Darker hues on Manhattan and Brooklyn indicate that these have the most AirBnB listings.



AirBnB : Top 15 Priciest Listings Analysis

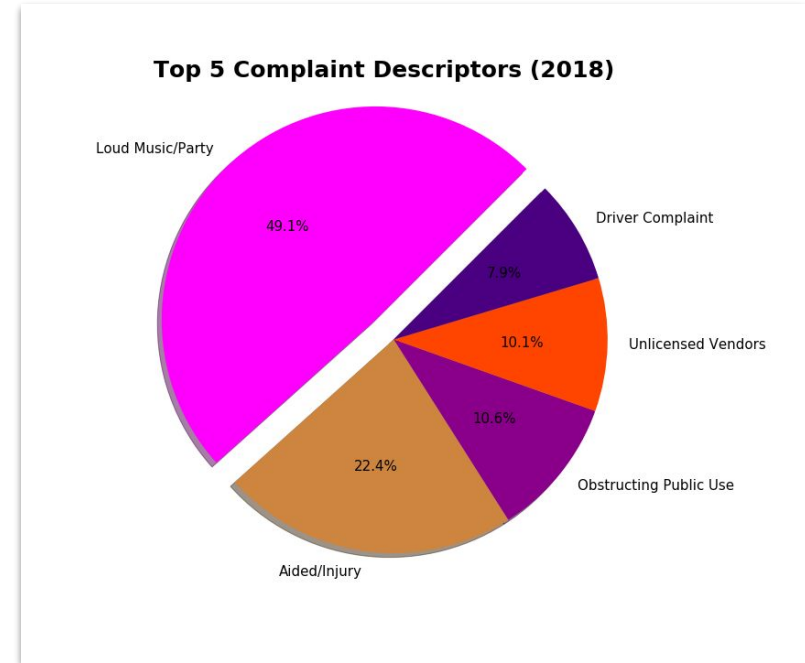
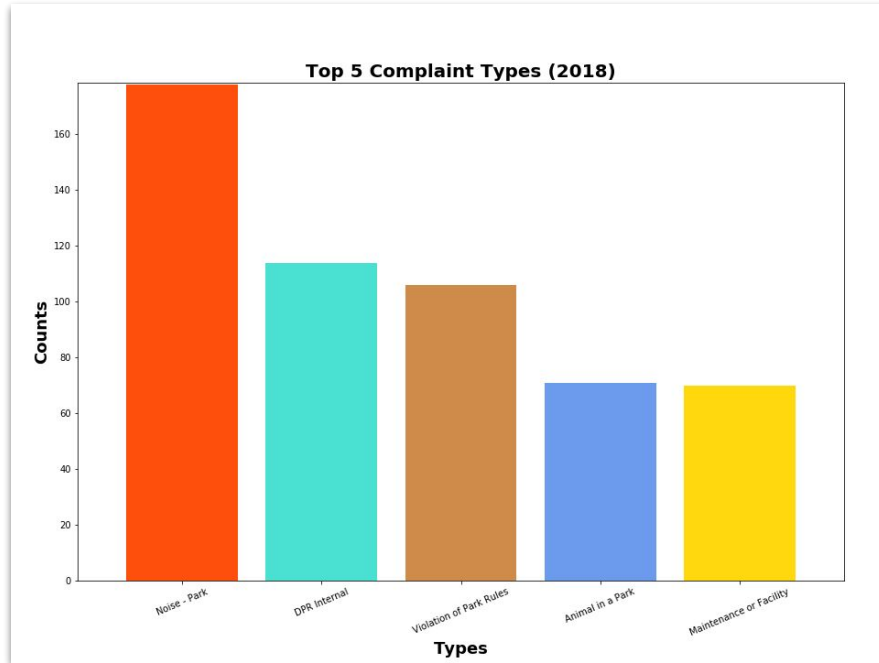


311 Data: Seasonality



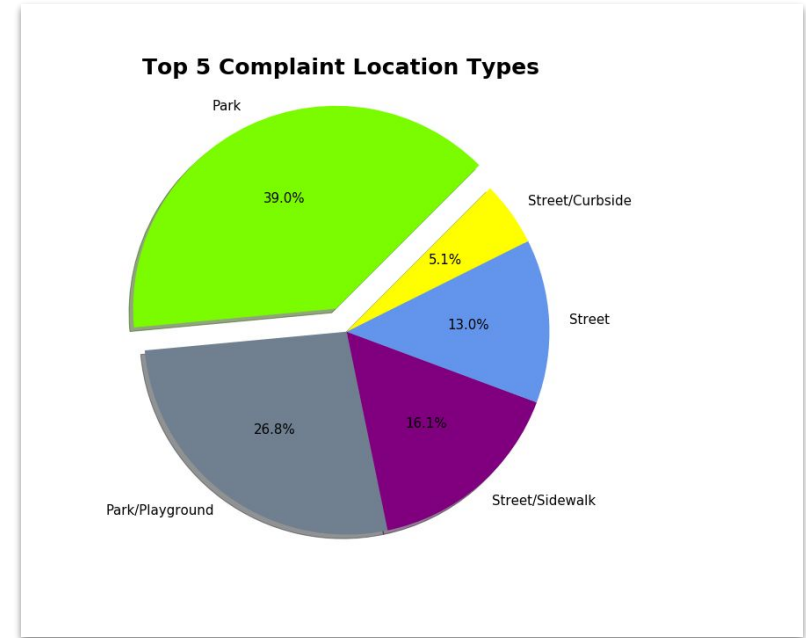
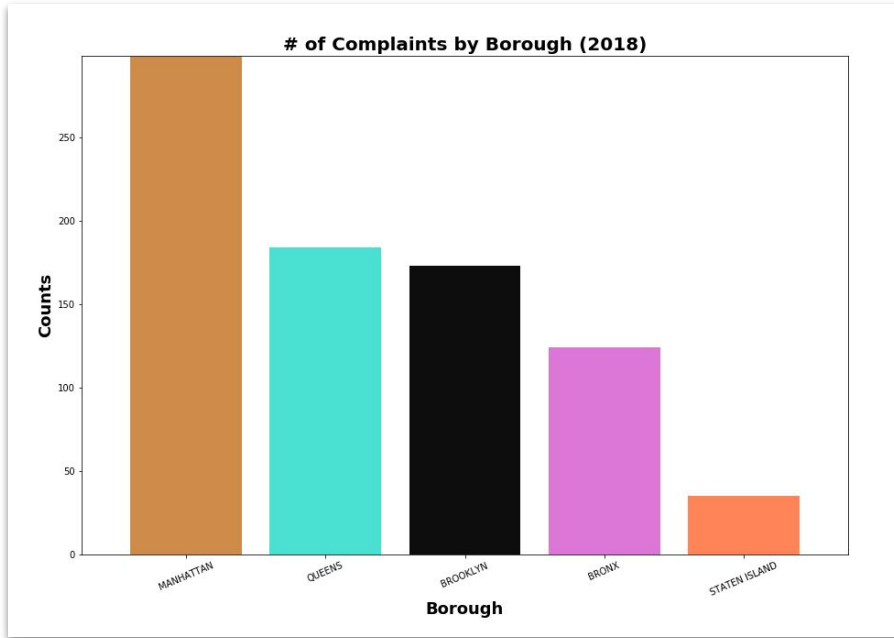
INSIGHT: The highest number of complaints trended in the summer months (May-August), peaking in July.

311 Data: Complaint Types and Descriptors



INSIGHT: The highest trending complaint type was Noise - Park, and the highest trending complaint type was Loud Music/Party.

311 Data: Boroughs and Location Types



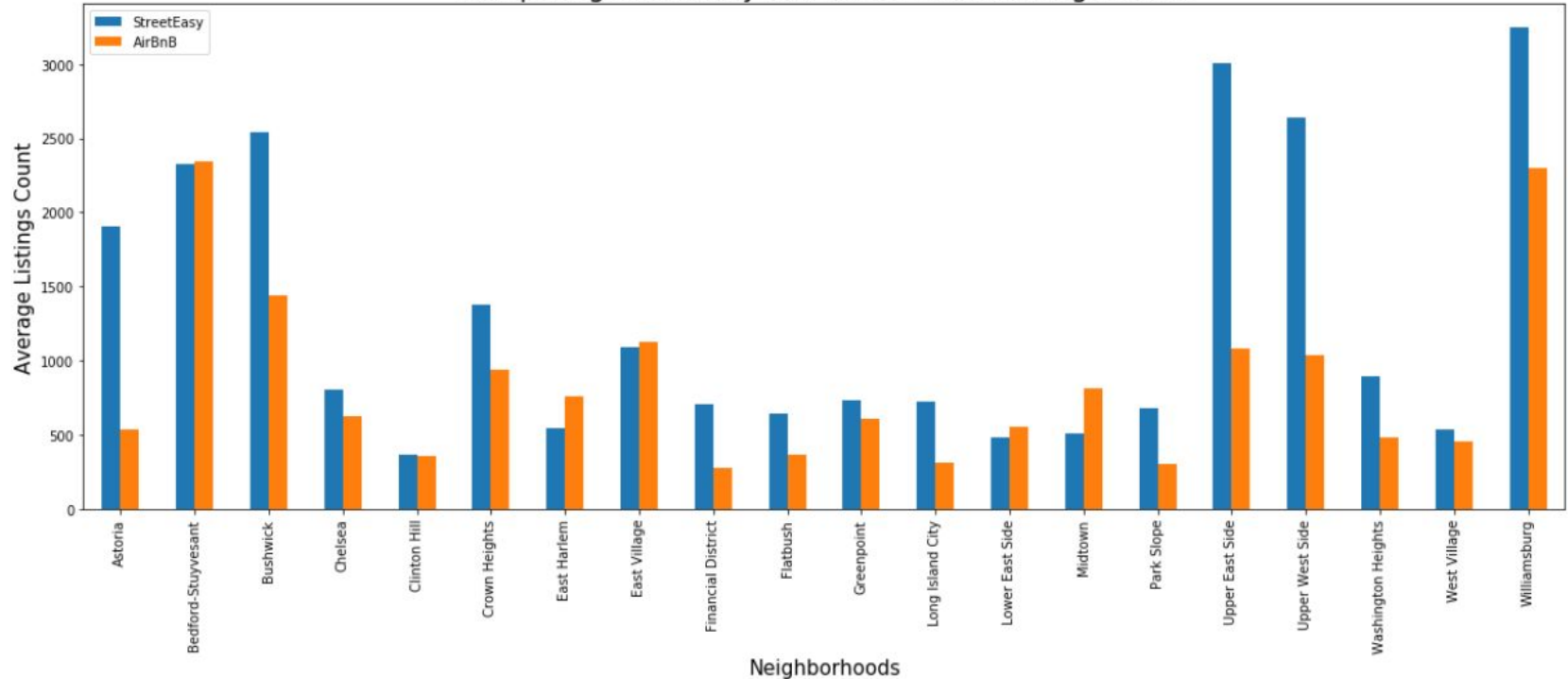
INSIGHT: The borough with the highest number of complaints was Manhattan, and the top trending complaint location types were all outdoors (parks, playgrounds, sidewalks, and streets).

StreetEasy, AirBnB and 311 Complaints Data Analysis

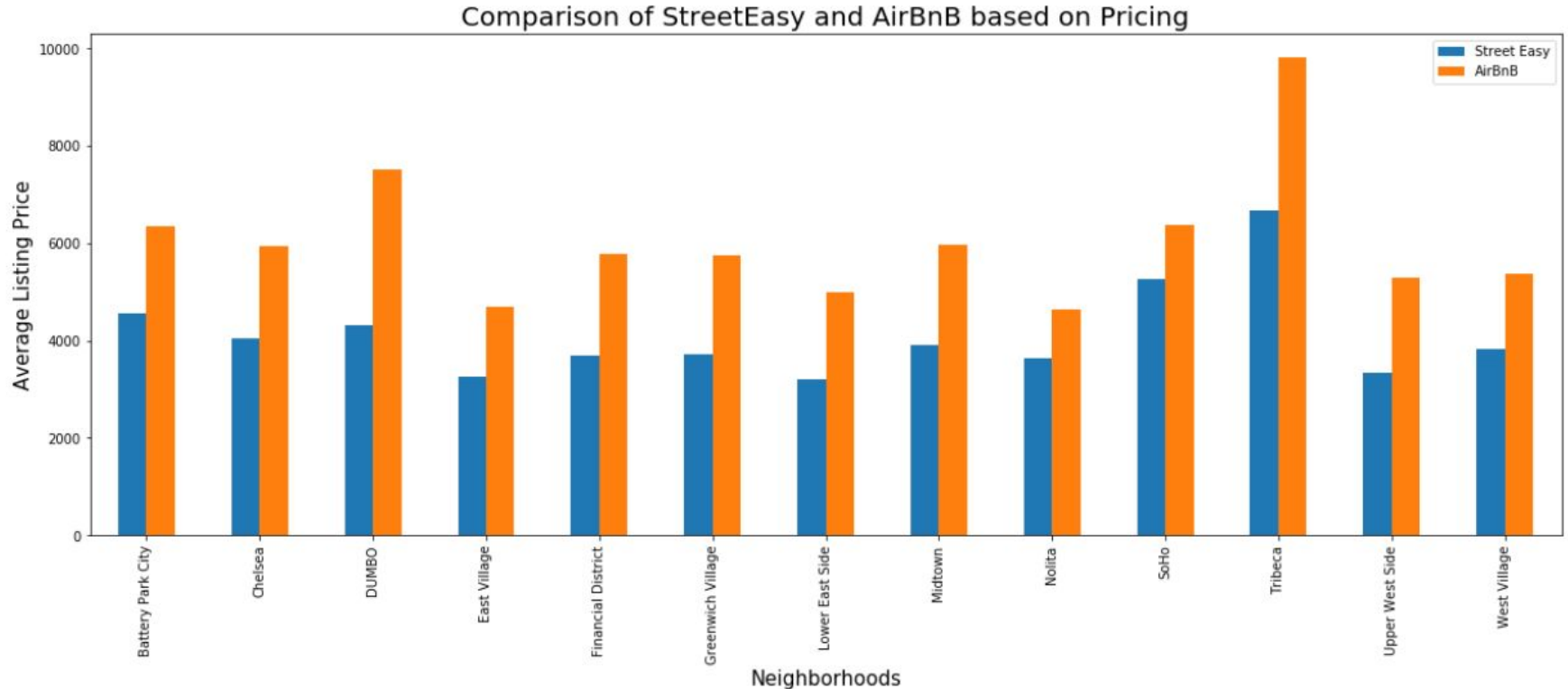


StreetEasy vs AirBnB Units Analysis

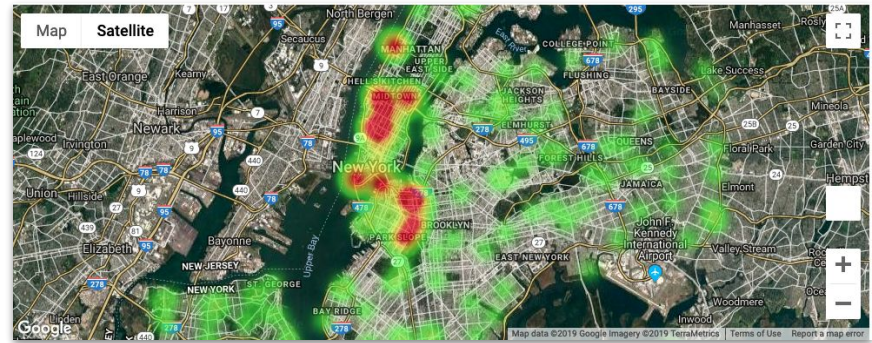
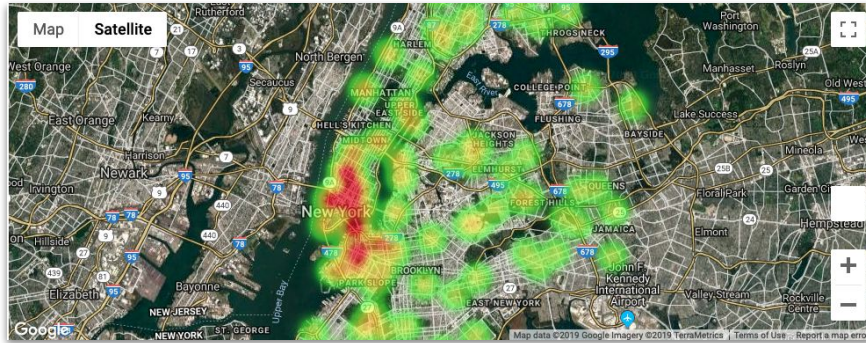
Comparing StreetEasy and AirBnB Units/Listings Count



StreetEasy vs AirBnB Pricing Analysis



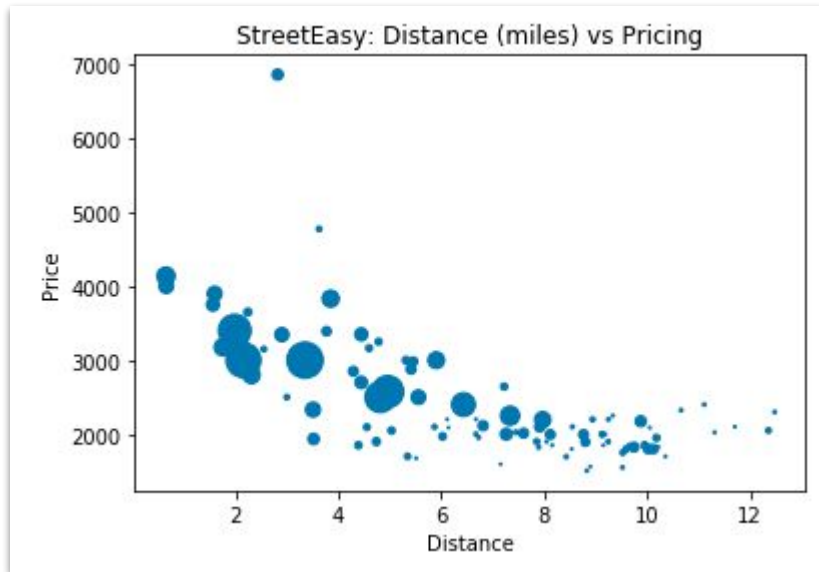
StreetEasy and AirBnB Data: Pricing Distribution 2018



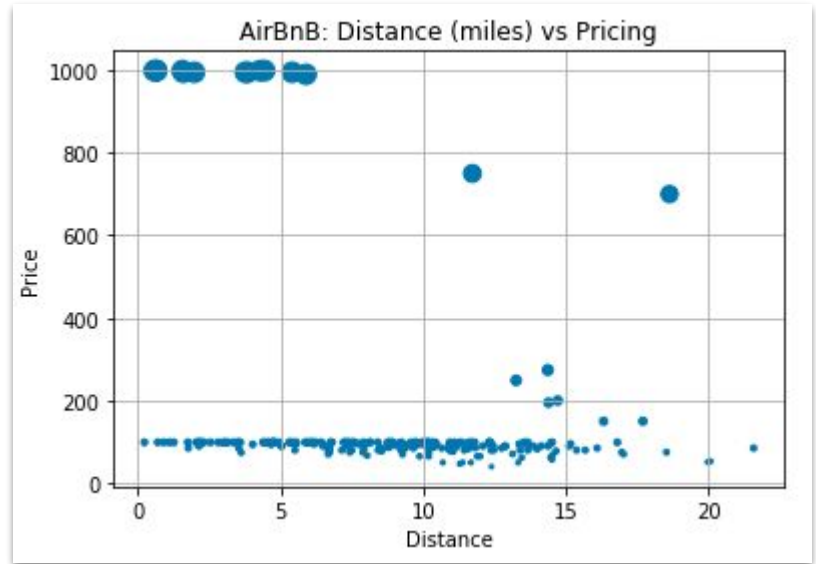
INSIGHT: StreetEasy: Expensive long term rental prices trend Midtown to Downtown areas.
AirBnB: Expensive listings are scattered across Manhattan and Brooklyn.

StreetEasy and AirBnB Data: Distance vs Median Asking Price 2018

StreetEasy

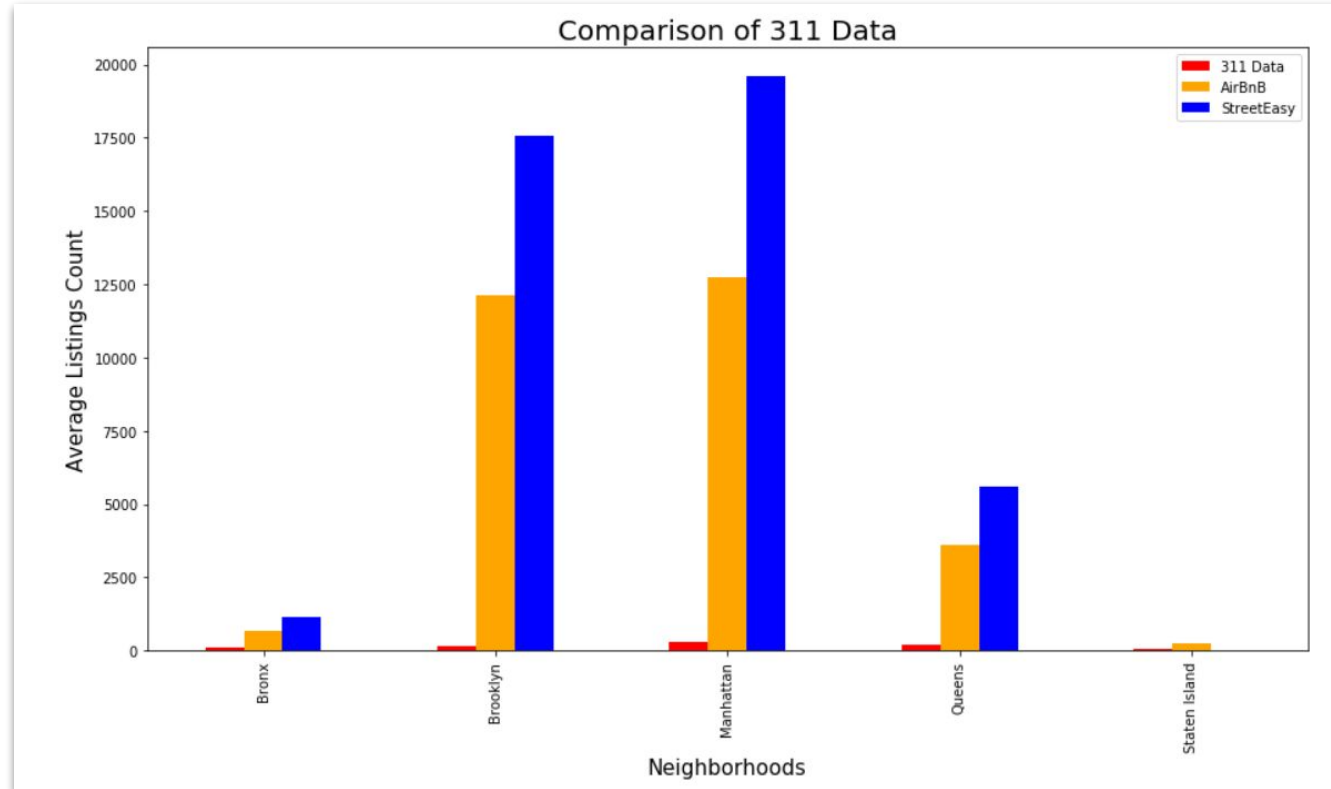


airbnb



INSIGHT: While Long rental pricing decreases as the listing moves away from the city center, short term rental doesn't show a clear pattern. Instead the pricing does not change by too much as the listing is moving away.

StreetEasy-AirBnB-311 Data Analysis

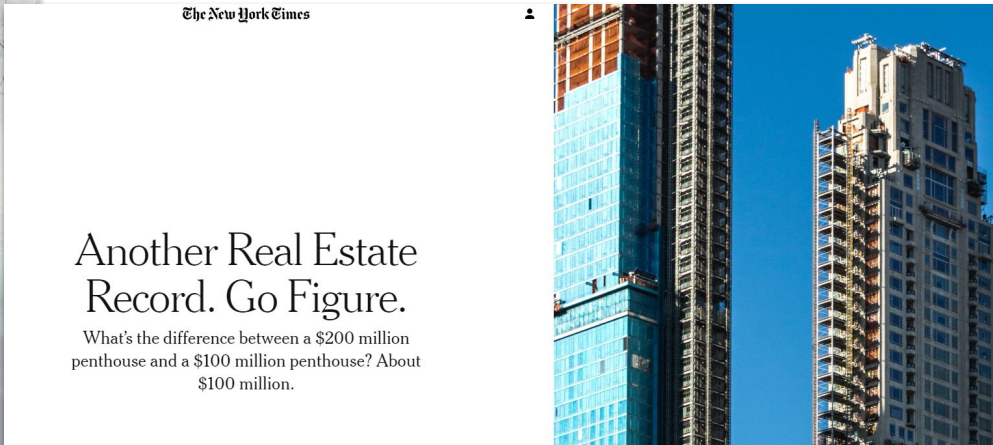


New York Times API Results

INSIGHT: Pricing Trends



INSIGHT: Soho trending high in pricing for AirBnB



INSIGHT: Prices are higher closer to city center and Manhattan is the Priciest



Conclusions and Limitations

Hypothesis Analysis

- | | |
|--|---|
| ❖ The neighborhoods with the cheapest rent will have more rental listings. | ❖ FALSE |
| ❖ The neighborhoods with the maximum complaints impact pricing in short and long term rentals. | ❖ FALSE |
| ❖ The average median price decreases as the distance from the city center increases. | ❖ TRUE FOR LONG TERM,
FALSE FOR SHORT TERM |
| ❖ Neighborhoods offering the most amount of listings are more expensive. | ❖ TRUE FOR SHORT TERM,
FALSE FOR LONG TERM |

Conclusions

- ❖ Airbnb 30-day rentals are more expensive than rentals listed on StreetEasy.
- ❖ The number of AirBnB listings popping up in various neighborhoods varies across boroughs and the trend observed is more residential the neighborhood lesser the listings and commercial neighborhood rental listings have a stiff competition from AirBnB.
- ❖ The cost of accommodation decreases as one moves away from the city center as far as long term rentals are considered, but short term listings do not exhibit a deviation in pricing for the same criteria.
- ❖ There is a lack of relationship between neighborhoods registering the maximum number of complaints and the ones with lowest prices of long term and short term rental.

Limitations and Challenges



Dealing with large
Size datasets.



Lack of content
information



Merging datasets was a
challenge due to lack of
common columns



Lack of time to explore and
understand the data better



One team member short



Modified approach in
analysing hypothesis

Questions

