Storeytelling Case Study: Airbnb

Methodology Document

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Steps followed

- Data sourcing to Excel
- Missing value treatment
- Outlier treatment
- Import in Tableau
- Binning of continuous variables
- Check current distribution of properties by Room Type , Location and Price etc using Tableau Visualisation
- Check relation of customer preference (reviews) with respect to Room type, location , Price etc using Tableau Visualisation
- Analyse the data and gather insights. Use review as a measure of preference of customers
- Make recommendations

Data sourcing to excel

- The dataset provided as sourced to Excel
- Following fields are present in the data

Column	Description
id	listing ID
name	name of the listing
host_id	host ID
host_name	name of the host
neighbourhood_group	location
neighbourhood	area
latitude	latitude coordinates
longitude	longitude coordinates
room_type	listing space type
price	
minimum_nights	amount of nights minimum
number_of_reviews	number of reviews
last_review	latest review
reviews_per_month	number of reviews per month
calculated_host_listings_count	amount of listing per host
availability_365	number of days when listing is available for booking

Check missing values, outliers and treat them

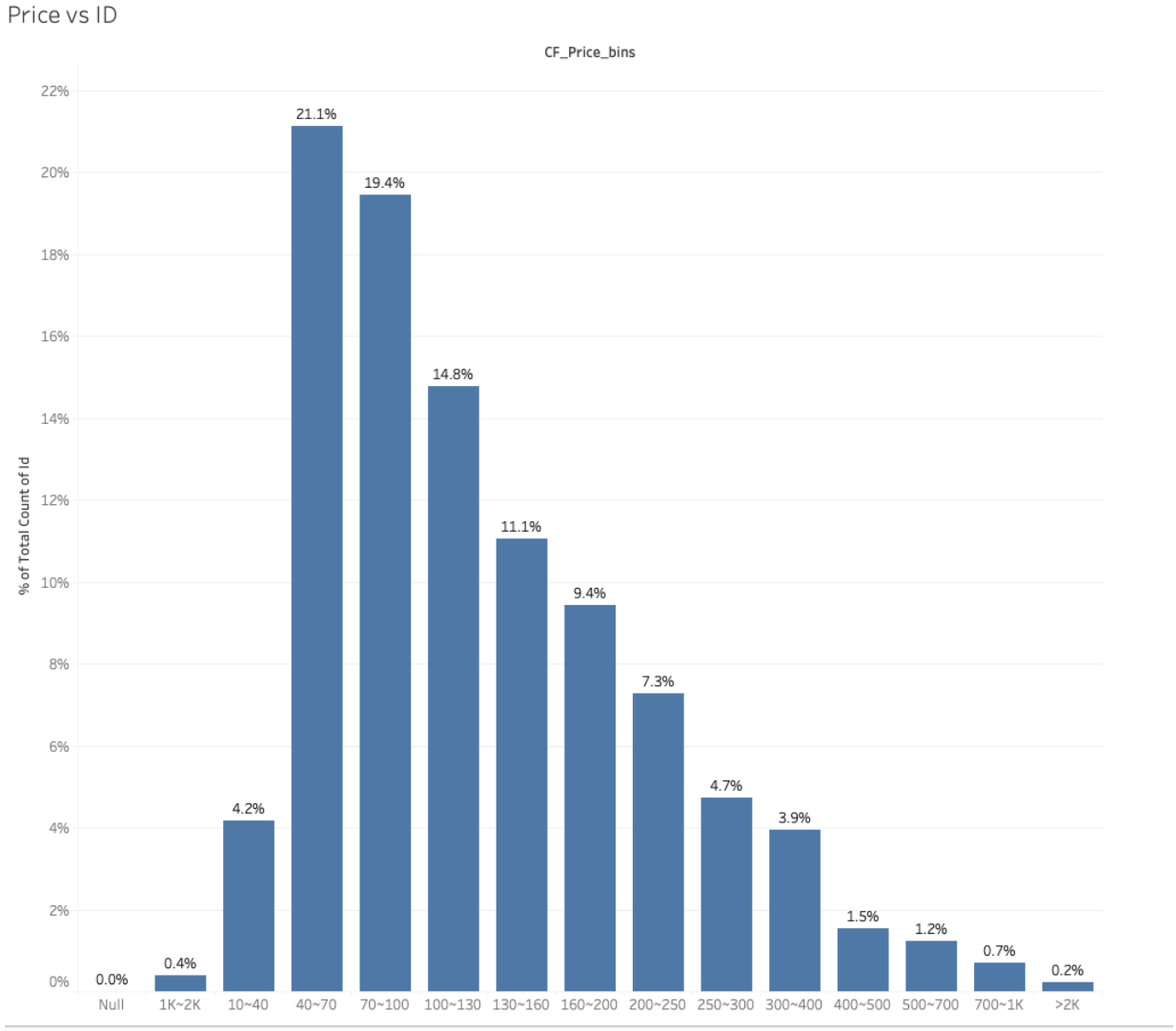
- The dataset has 48895 records
- Some columns have missing records as shown below:

	name	host_name	last_review	reviews_per_month
No of Missing record	16	21	10052	10052
% of missing records	0%	0%	21%	21%

- "name " and "host_name" have very less missing values. Also their respective ids don’t have any missing values. Hence no missing value treatment is done.
- All "last_review" and "reviews_per_month" missing values correspond to the records where there are no reviews.
- Hence missing values in "reviews_per_month" are imputed with "0" and "last_review" missing values are replaced with "No_reviews".
- Price column has 11 records having 0 value. Since the number of records are very less, they have been deleted.

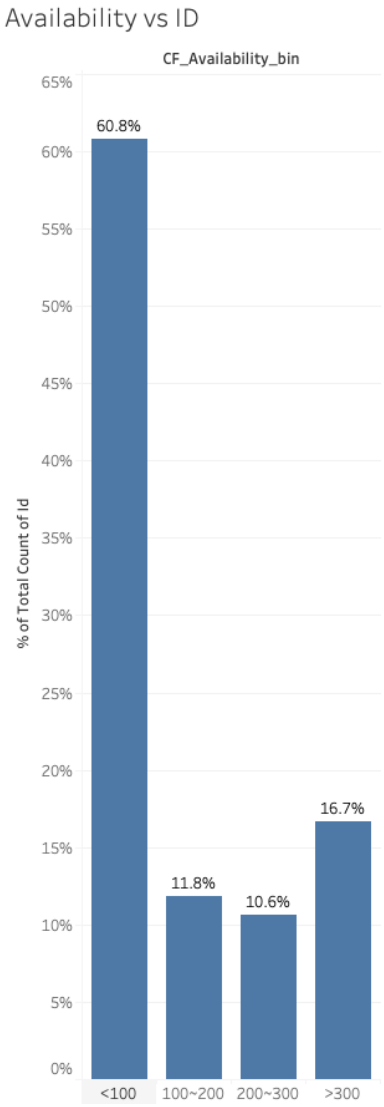
Import in Tableau and Binning of continuous variables

- Import the data to Tableau for visualisation
- Price ranges from 1~10000. Appropriate bins were created. Only 0.2% properties have price >2000.



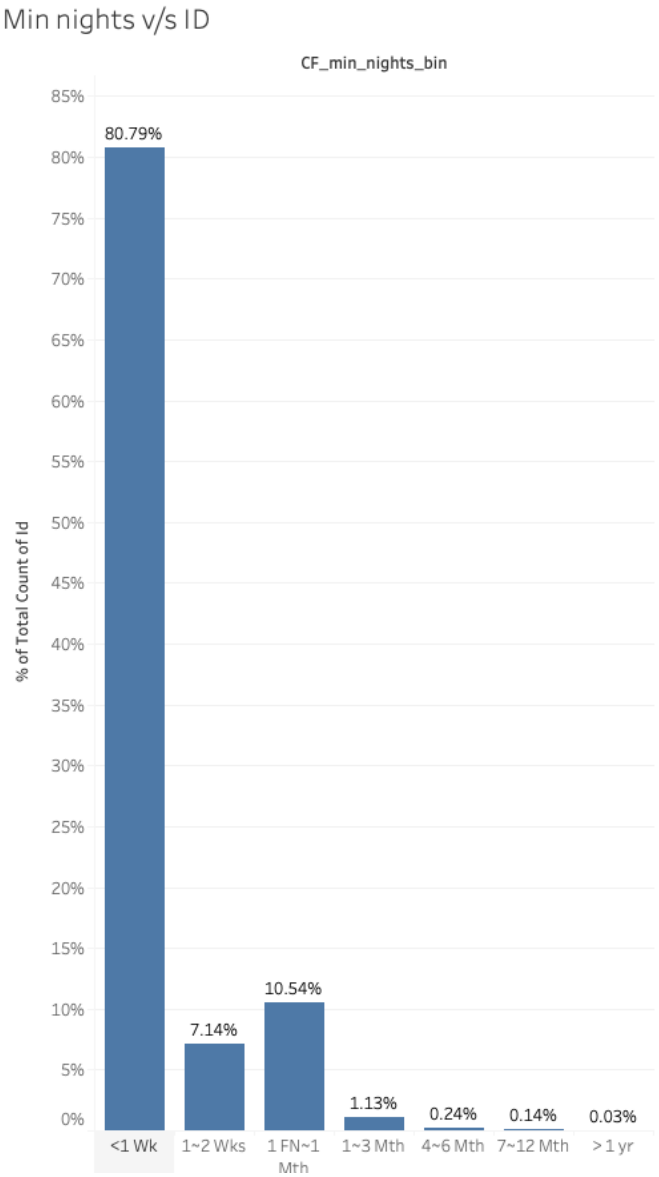
Binning of continuous variables: Availability 365

- For Availability 365 (Number of days) of rooms 4 bins were created <100,100-200,200-300,>300. 16.7% properties have >300 days availability.60.8% properties have <100 days availability



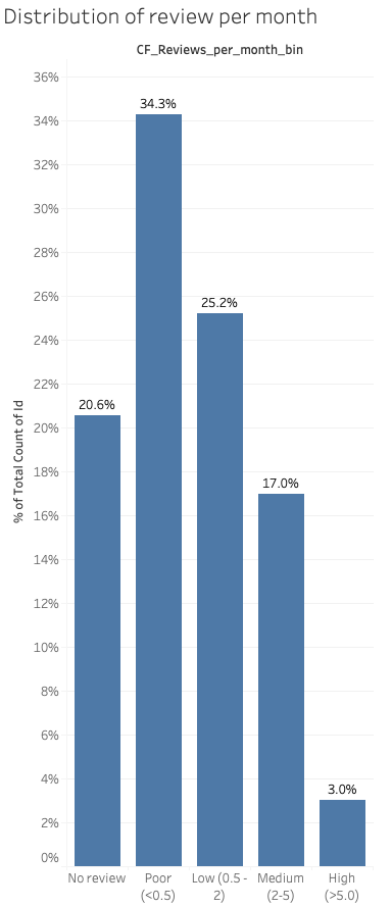
Binning of continuous variables: Minimum nights

- Minimum nights ranges from 1~ 1250. Total 7 bins were created. >1 Yr is only 0.03%. 80.79% properties have Min Nights <1 week

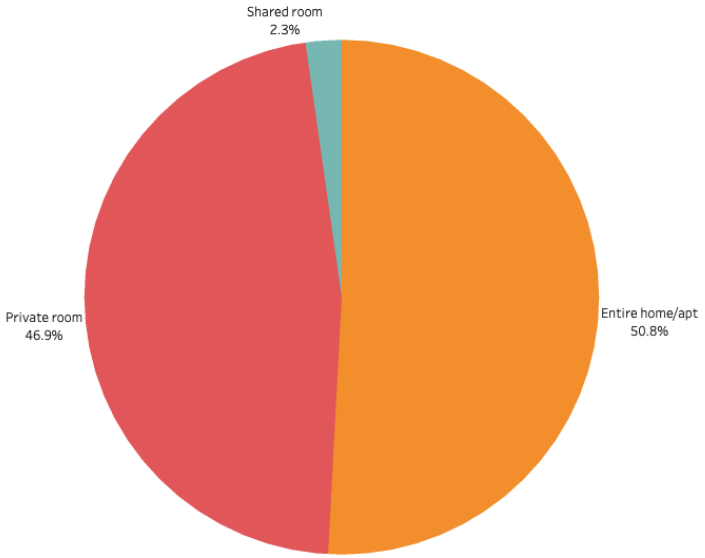


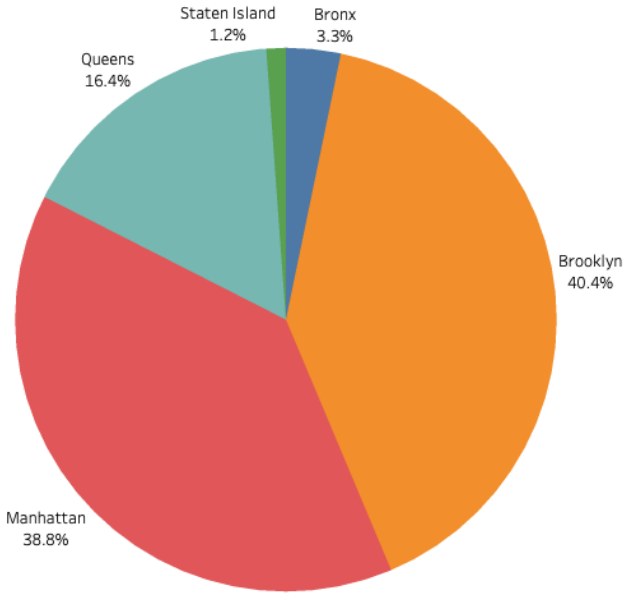
Binning of continuous variables: Reviews Per Month

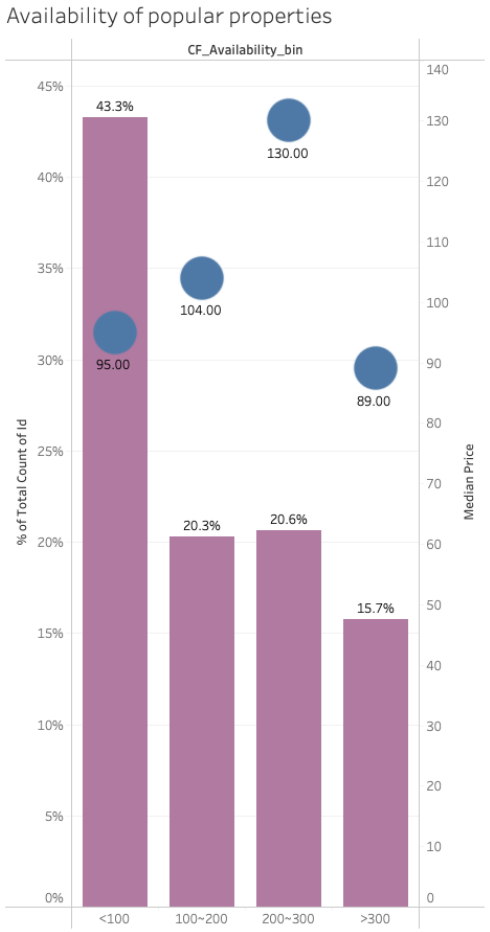
- 4 Bins were created for Reviews Per Month. 20.6% properties have No Reviews. Only 3% properties have >5 reviews per month.
- Medium and High review properties were considered to fall in Good popularity category while Poor review properties were considered to be not popular. Filtering as per this criterion was used in subsequent analysis
- Total 20% properties fall in Good popularity category

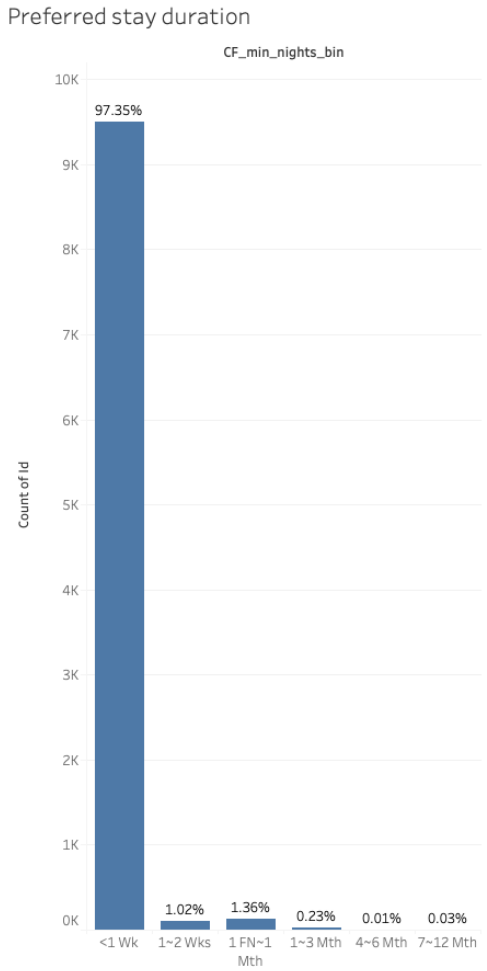


Analysis 1:
Customer preference: Room Type, Neighbourhood Group, Stay duration, Availability







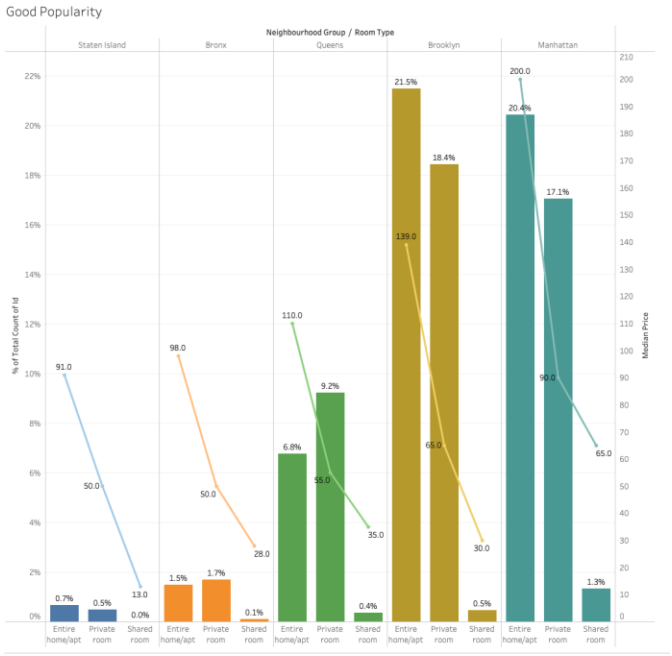


- Filtering in Tableau was done for Good Popularity properties for creating all these visualisations

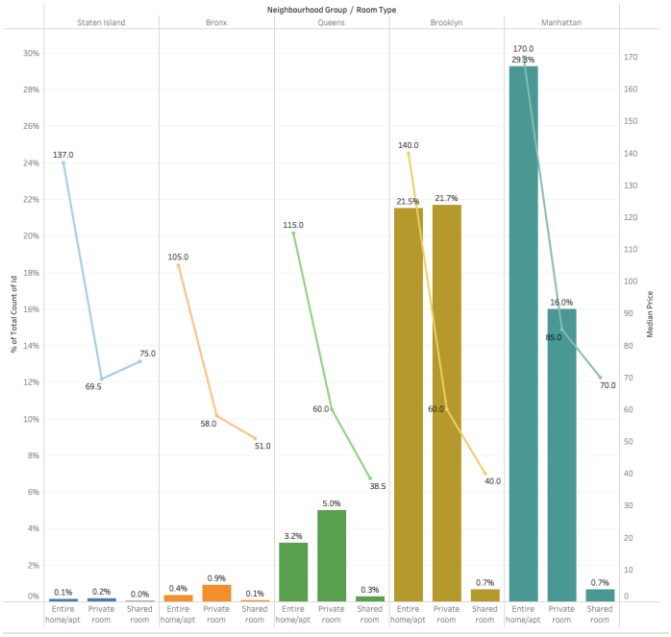
Analysis 2:
Preferred Properties in popular Neighbourhoods at desired prices

- Good and Poor popularity properties were visualised using dual axis charts.
- The properties were mapped wrt Neighbourhood Group, Room type and Median price
- Further, for each neighbourhood group property types were mapped wrt popularity and median price
- Finally number of properties in top neighbourhood were checked with respect to their popularity.
- Gaps in number of properties were identified and high potential localities were noted down

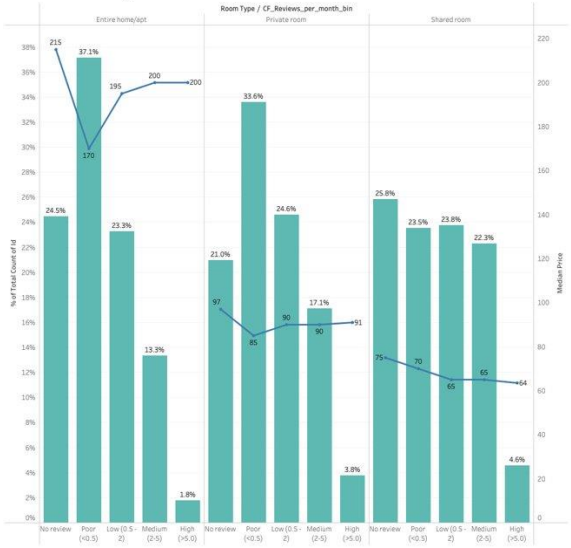
Good Popularity



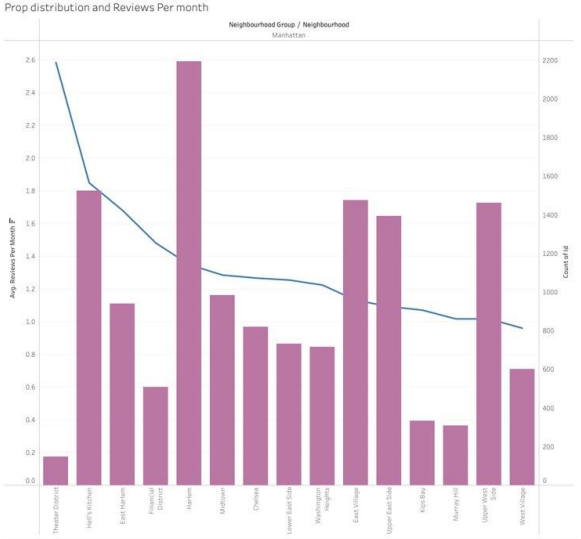
Poor Popularity



Distribution of Room Type-Manhattan



Prop distribution and Reviews Per month

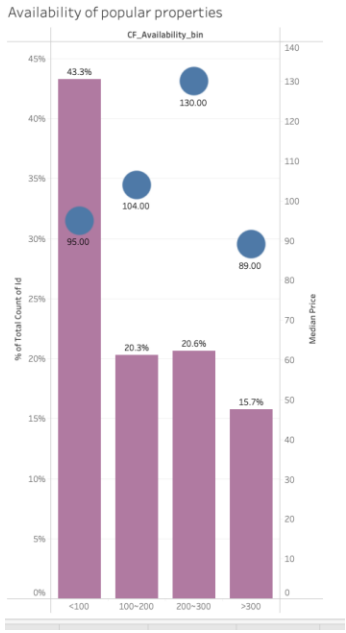


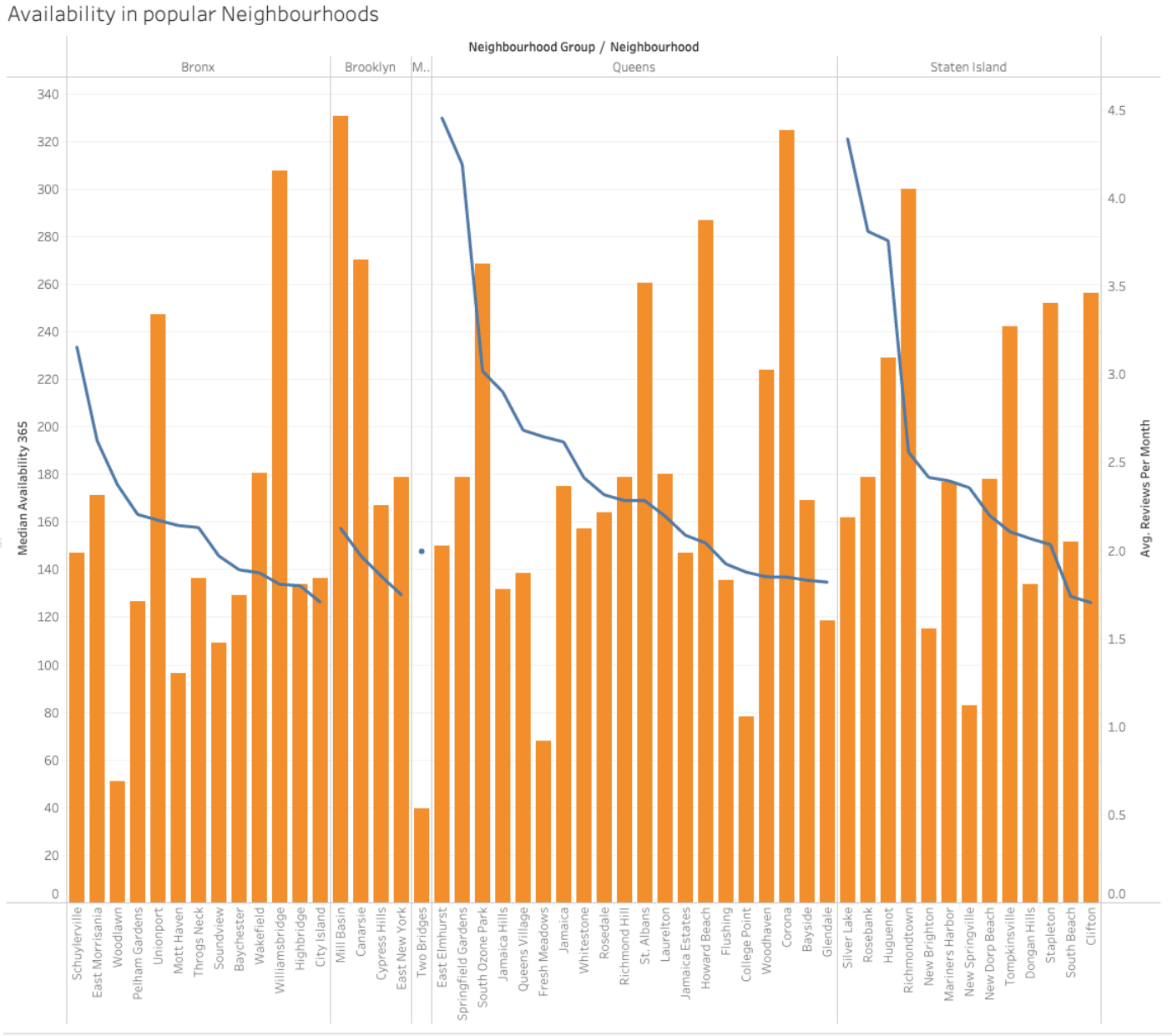
Analysis 3:
Property Availability in Popular Neighborhoods

Availability by Region

Neighbourhood Group

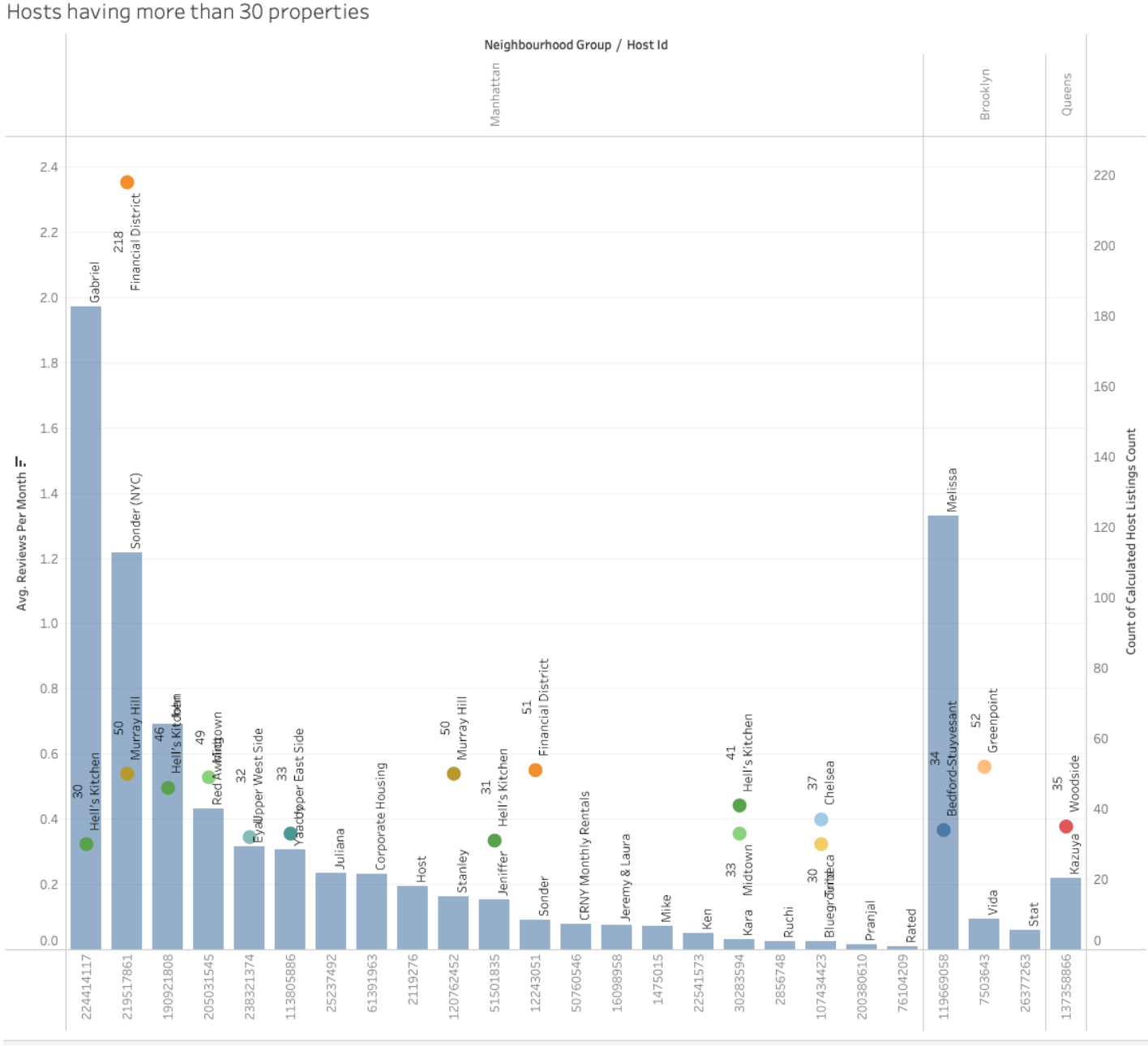
CF_Availabilit..	Bronx	Brooklyn	Manhattan	Queens	Staten Isla..
>300	0.63%	5.64%	7.46%	2.70%	0.27%
<100	0.98%	26.82%	26.95%	5.80%	0.26%
200~300	0.22%	4.13%	4.93%	1.23%	0.13%
100~200	0.39%	4.51%	4.97%	1.85%	0.11%





- Region-wise availability was checked wrt the bins created earlier
- Another visualization was created to check Good popularity properties wrt availability and median price
- Using dual axis chart a visualization was created to map neighborhoods wrt availability and average monthly review and gaps were identified

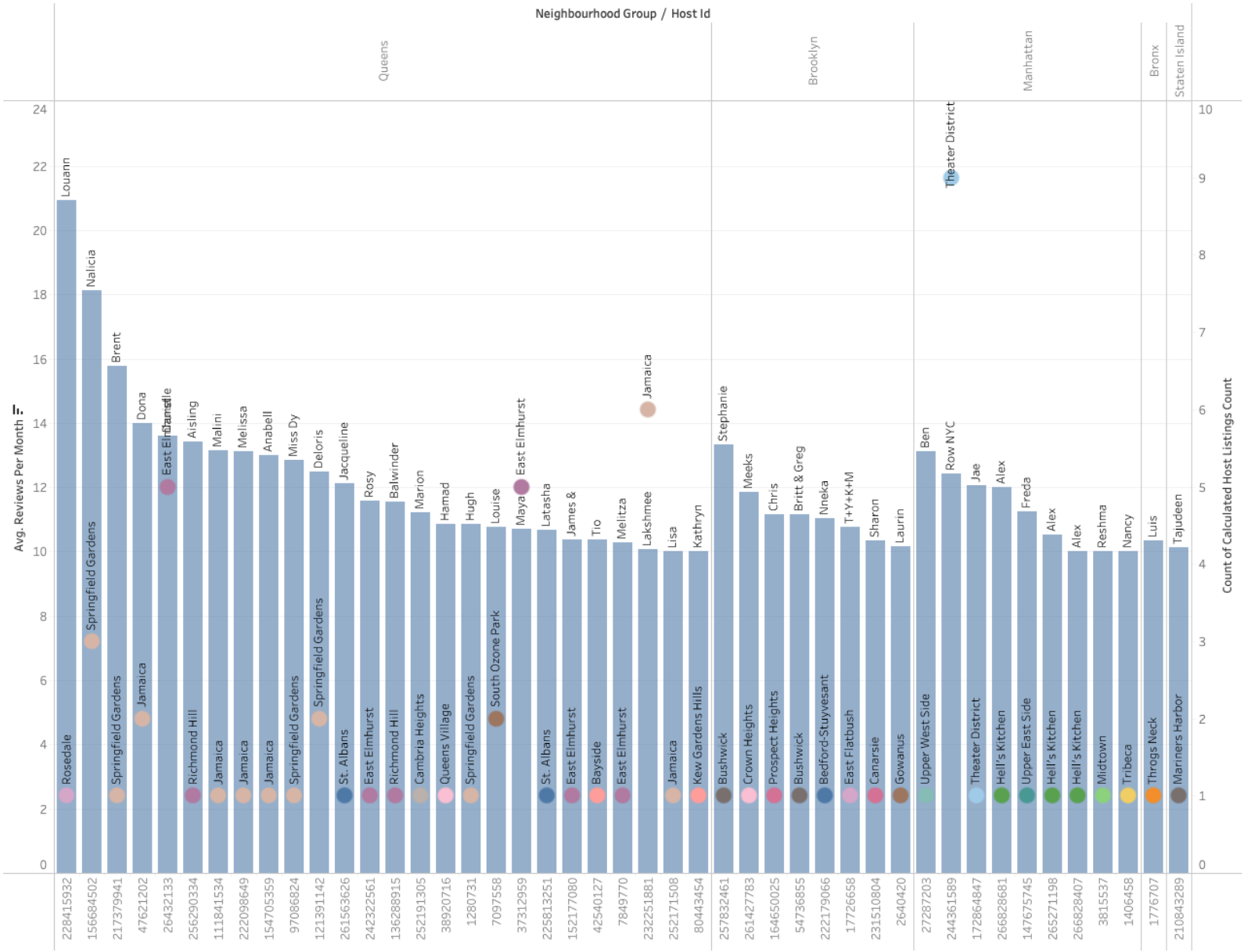
Analysis 4:
Check popularity of Hosts having more than 30 properties



- Dual axis chart was made to check the popularity of hosts having more than 30 properties.

Analysis 5:
Find out the Hosts having best reviews and where they are located

Hosts with having >10 reviews per month



Another dual axis chart was made to find out hosts having best reviews.

Neighbourhoods belonging to these hosts were also highlighted

Make Recommendations

- Using the analysis preferred room type , median price and neighbourhoods were summarised as recommended properties to be acquired:

	Manhattan	Brooklyn	Queens	Bronx	Staten Island
Entire Home/ Apt (Price)		139	110	98	91
Private Room (Price)	90		55	50	50
Shared Room (Price)	65				
Neighbourhood	Theatre District	Canarsie, East New York, Flashbush	East Elmhurst, Jamaica and Richmond Hill	Claremont Village, Belmont	Mariners Harbor, Grant City and Stapleton

- Basis the analysis locations were identified where improvement in availability will help in boosting the business. These locations were recommended
- Recommendations were made to get more traction for high number of less popular properties basis
  - Analysis of hosts having large number of properties
  - Analysis of popularity of Min nights stay
  - Analysis of popularity basis Availability .
  - Analysis of hosts having Good popularity