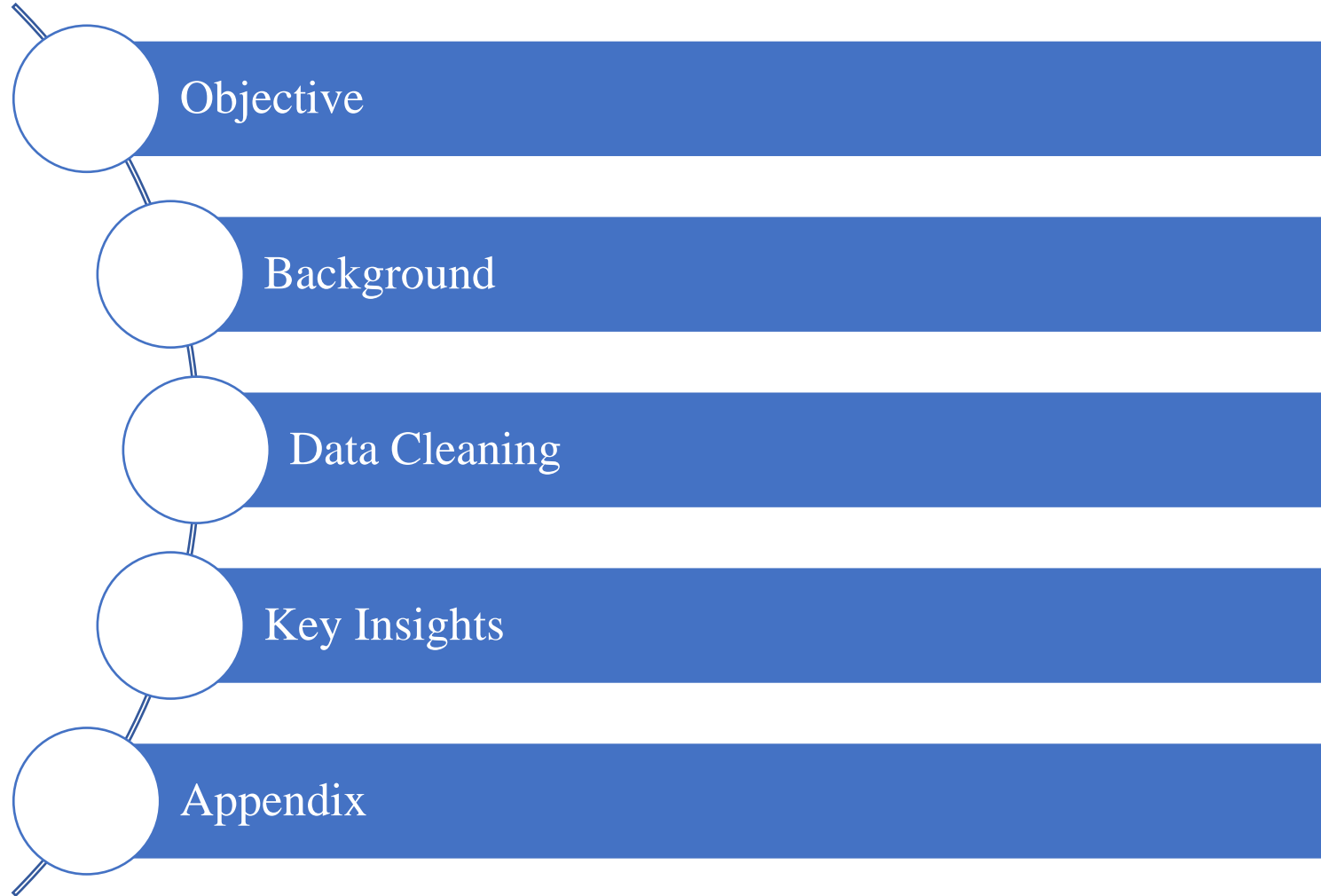


# **Optimizing Insights:** **Data-Driven Analysis of Airbnb Listings in NYC**



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# Agenda



# Objective

- Which type of hosts to acquire more and where?
- The categorization of customers based on their preferences.
- What are the neighborhoods they need to target?
- What is the pricing ranges preferred by customers?
- The various kinds of properties that exist w.r.t. customer preferences.
- Adjustments in the existing properties to make it more customer-oriented.
- What are the most popular localities and properties in New York currently?
- How to get unpopular properties more traction?

# Background

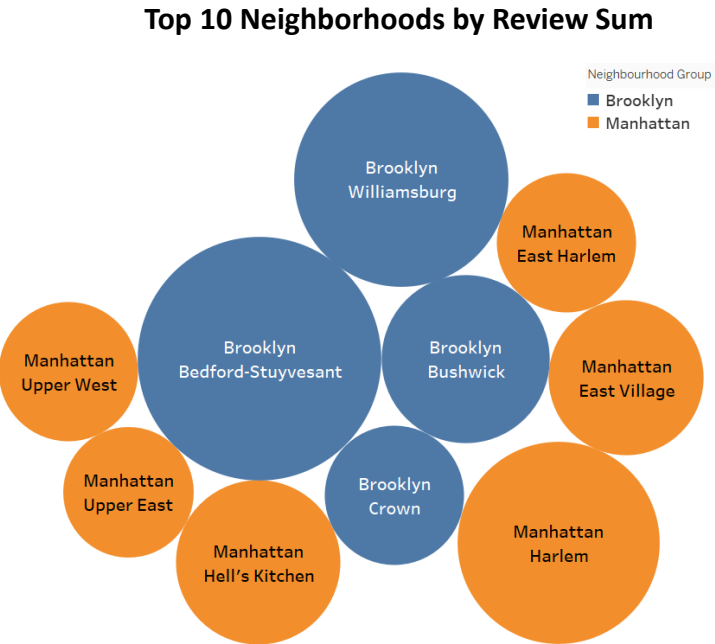
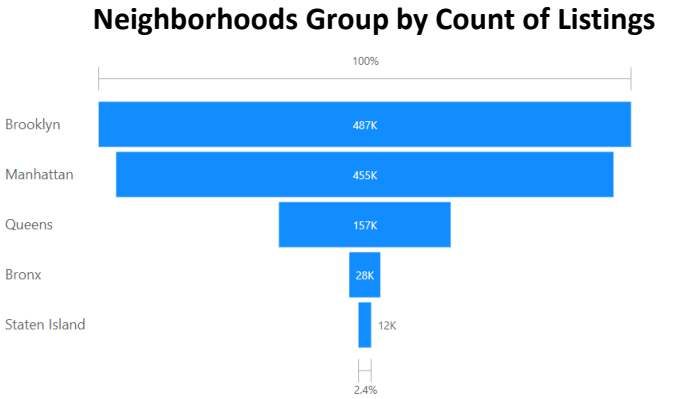
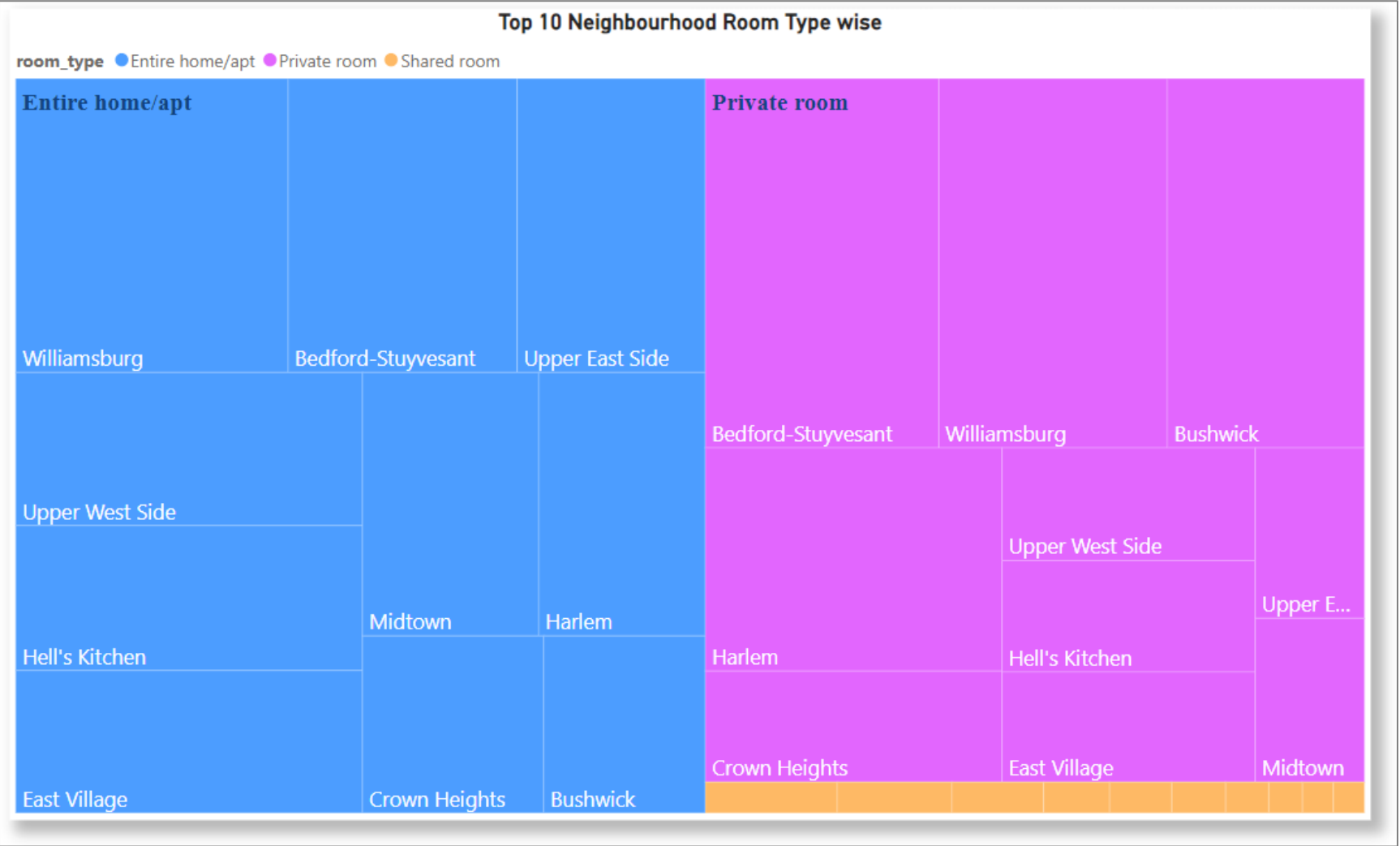
- Past few months, Airbnb has seen a major decline in revenue.
- Now that the restrictions have started lifting and people have started to travel more, Airbnb wants to make sure that it is fully prepared for this change.
- The different leaders at Airbnb want to understand some important insights based on various attributes in the dataset so as to increase the revenue.

# Data Cleaning and Data Preparation

- Missing Value imputed by mean, median
- Outlier identified using boxplot, treated using capping
- Correlation matrix used to understand the relation between numerical variables
- New columns created to understand the feature better.

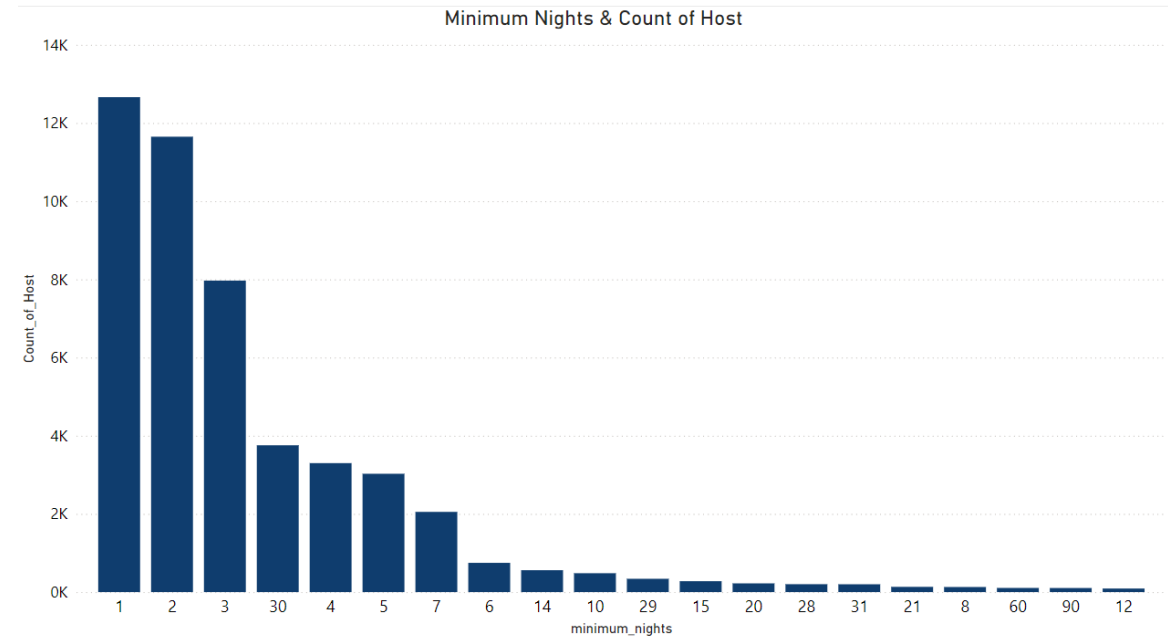
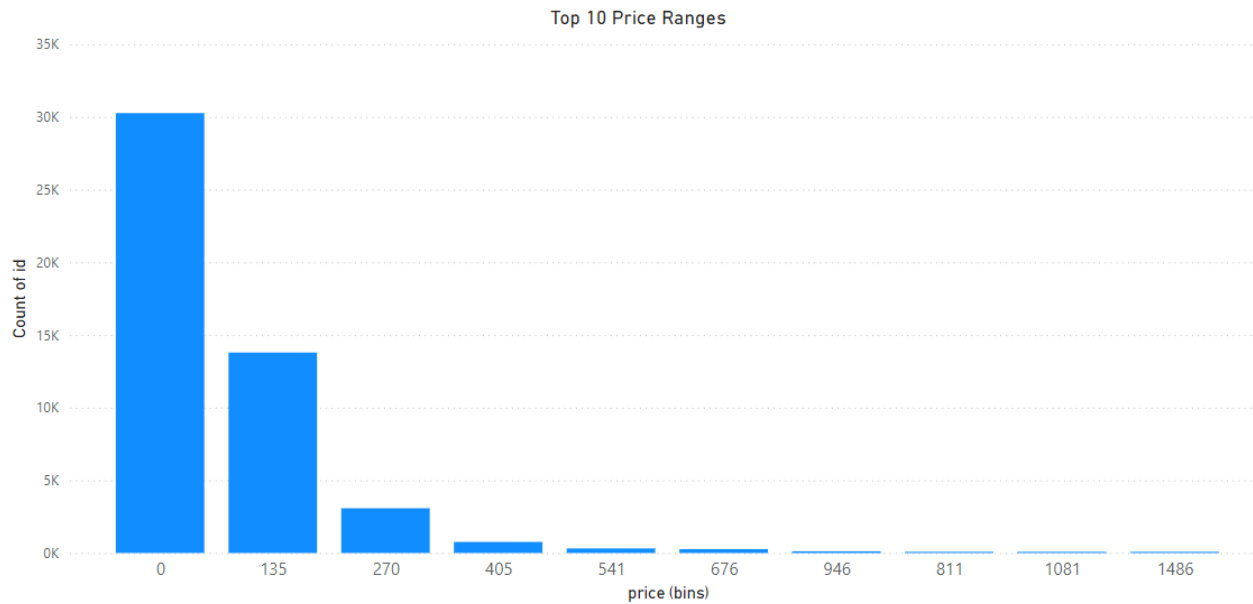
# Type of Host & Location

- Entire homes/apartments and private rooms are the dominant room types (98%) for Airbnb listings
- Top Neighborhoods: Williamsburg, Bedford-Stuyvesant, Bushwick, East Village, Herlem
- Brooklyn** and **Manhattan** are the leading neighborhood groups.



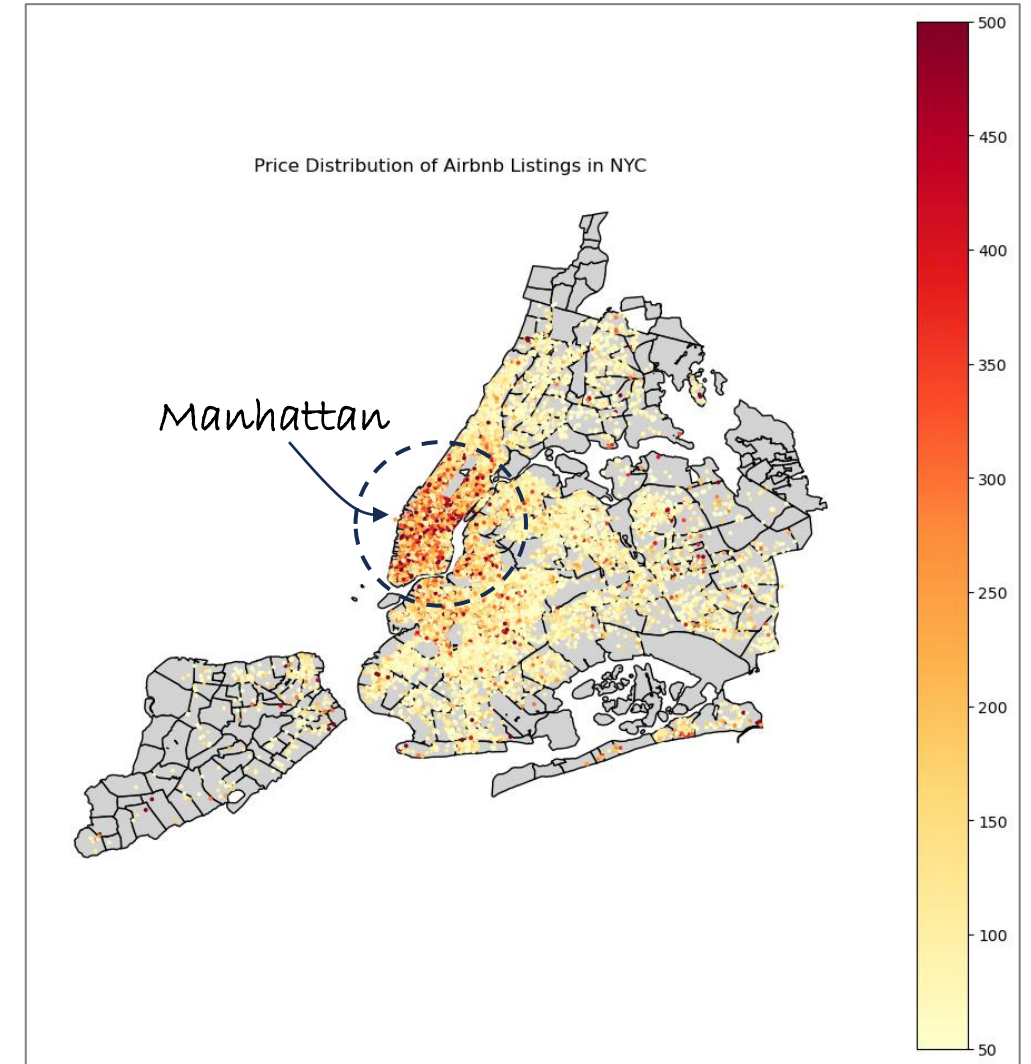
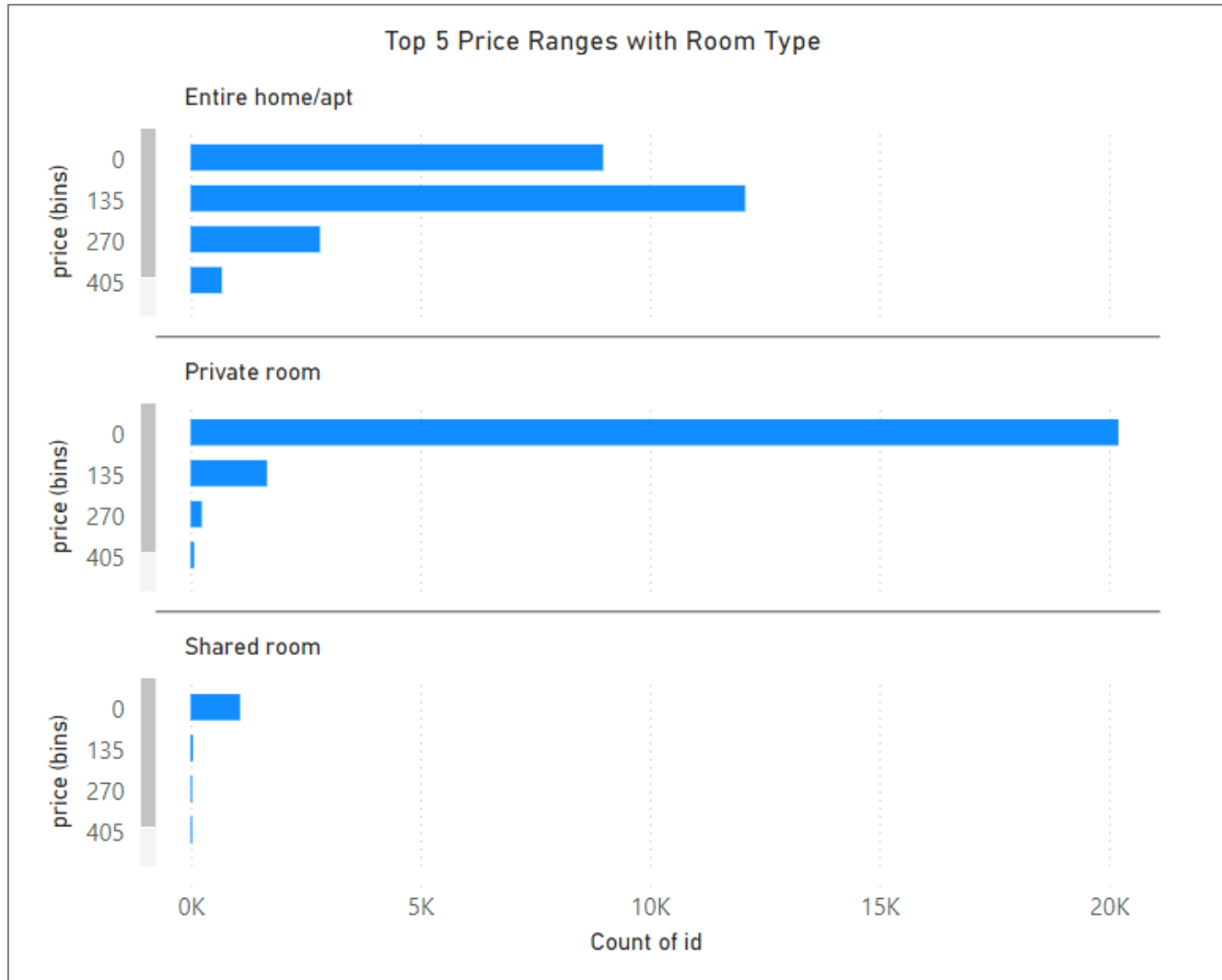
# Categorization of customers based on their preferences

- A preferred price range of **\$0 to \$135** aligns with the project's objective to maximize booking potential.
- Most common minimum night stay requirement is **1 to 2 days**.



## Pricing Ranges With Room Type & Location

- Entire Home/Apt preferred price range is **\$135 to \$270**, with the second most popular range is below \$135.
- Private Room: Majority of listings are priced under \$135.
- Shared Rooms: Almost all listings are below \$135.

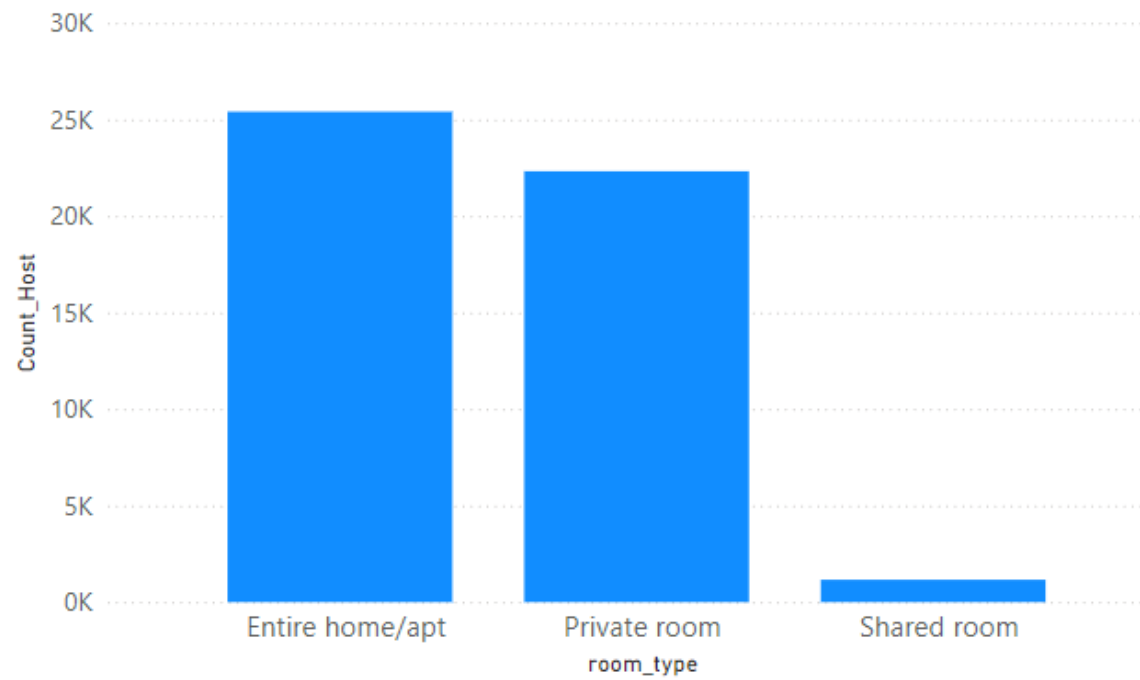




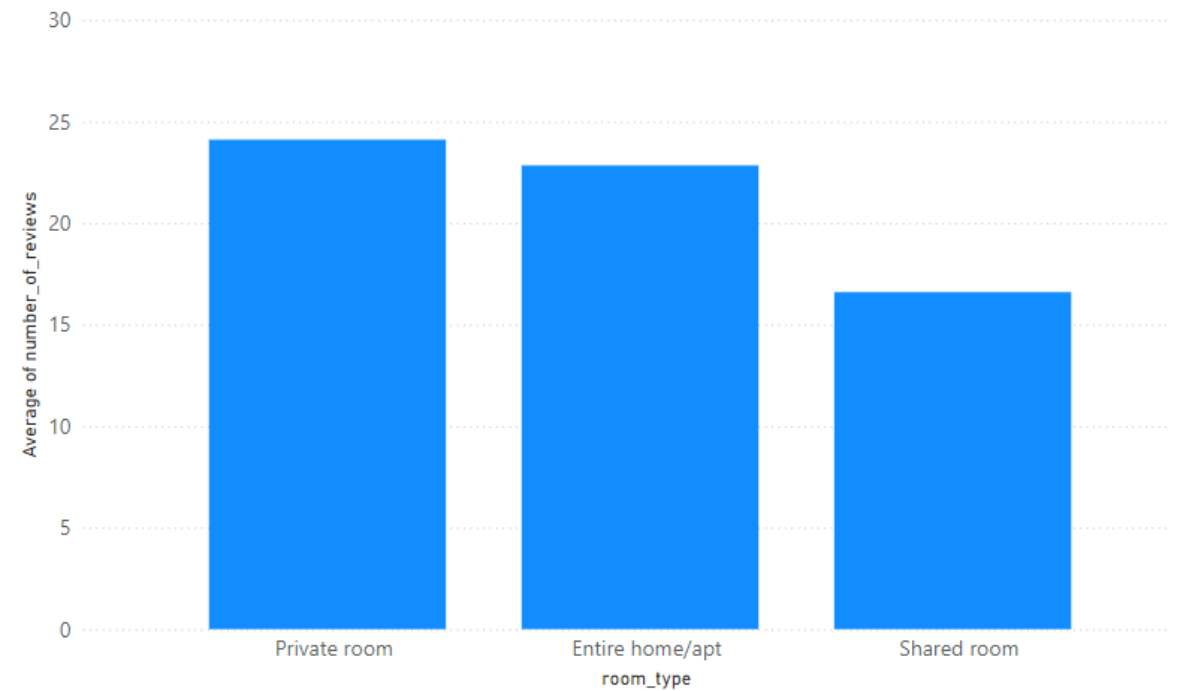
## The Various Kinds Of Properties That Exist W.R.T. Customer Preferences

- In Room type Entire Home/apt are higher in number
- Guests have a higher interest in private spaces
- Shared Room is less preferred room type

Count\_Host by room\_type

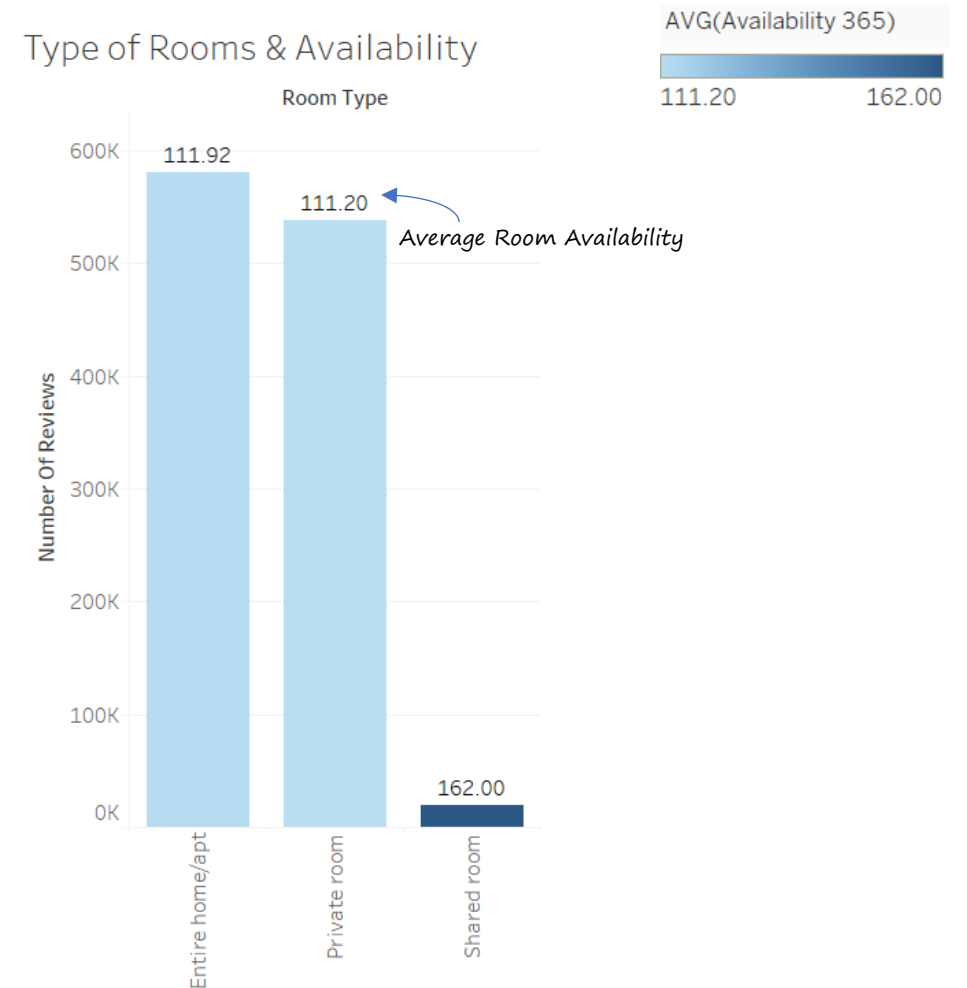
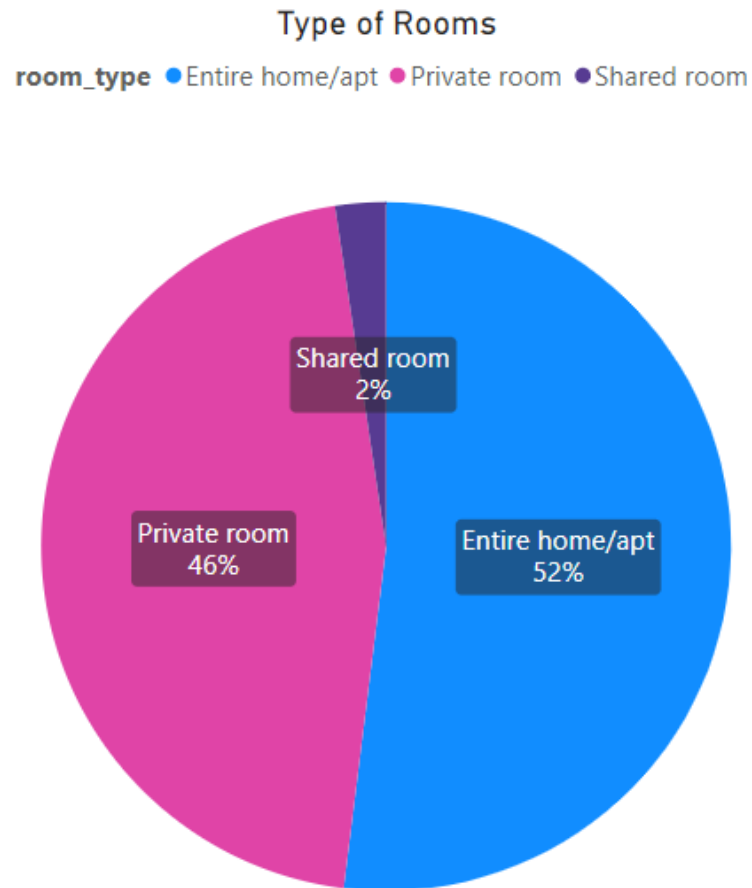


Average of number\_of\_reviews by room\_type



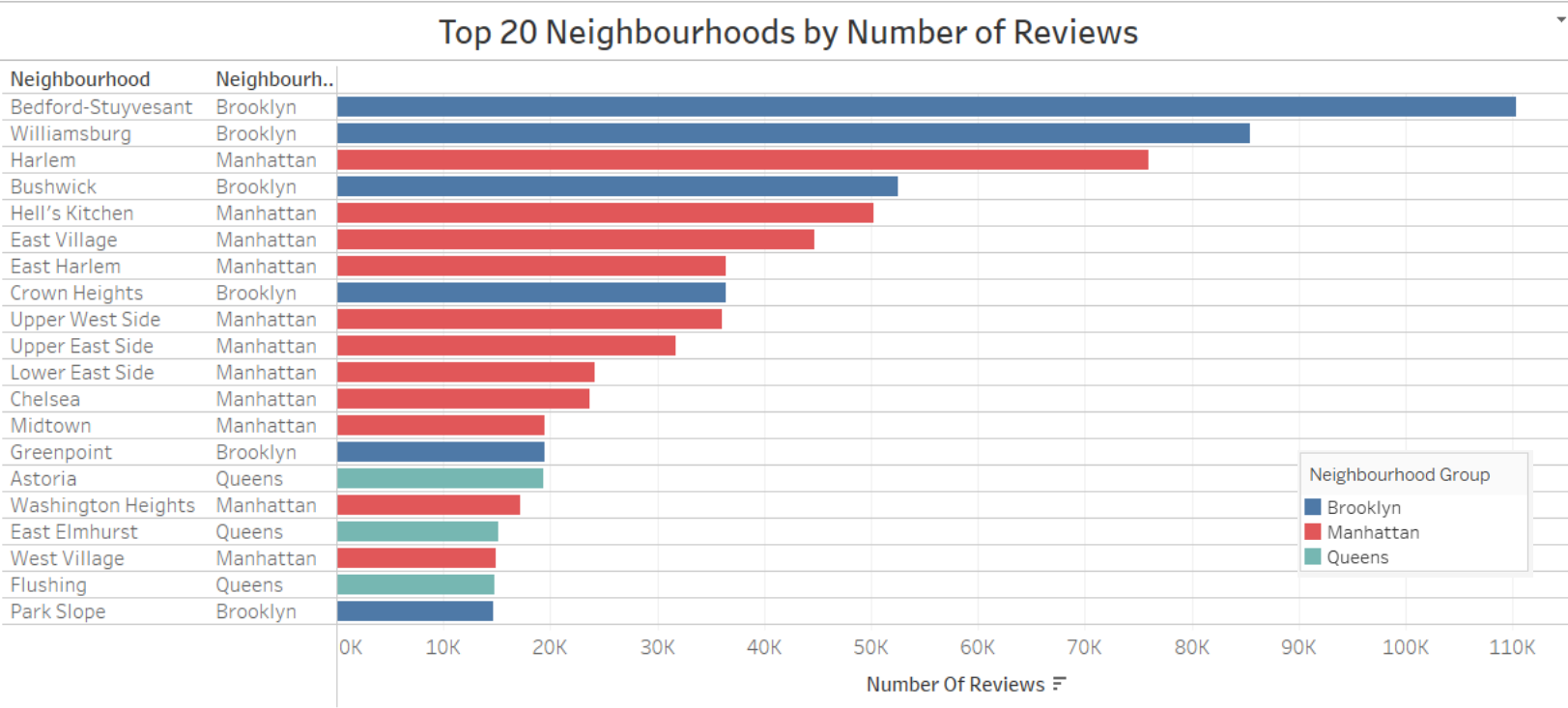
## Adjustments In The Existing Properties

- Entire Home/apt & Private Rooms have strong customer preference, Both contributing 98% room type, But their **average availability is very low** (111days).
- Shared room availability is high but demand is very low.



# Most Popular Localities And Properties In New York Currently

- Popular Neighborhoods: Bedford-Stuyvesant, Williamsburg, Harlem, Bushwick, Hell’s Kitchen
- Popular Neighborhoods Groups: Brooklyn, Manhattan
- Top Properties: Room near JFK Queen Bed, Great Bedroom in Manhattan, Beautiful Bedroom in Manhattan



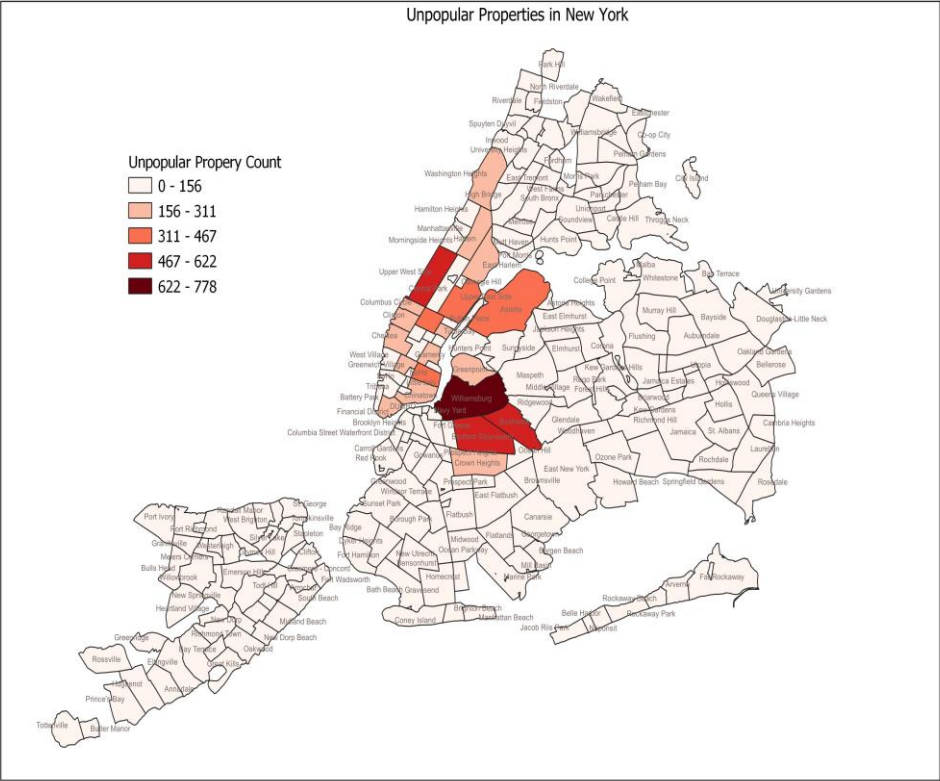
Name Top 20 Properties in New York by number of reviews

Rank	name	neighbourhood_group	neighbourhood
1	Room near JFK Queen Bed	Queens	Jamaica
2	Great Bedroom in Manhattan	Manhattan	Harlem
3	Beautiful Bedroom in Manhattan	Manhattan	Harlem
4	Private Bedroom in Manhattan	Manhattan	Harlem
5	Room Near JFK Twin Beds	Queens	Jamaica
6	Steps away from Laguardia airport	Queens	East Elmhurst
7	Manhattan Lux Loft.Like.Love.Lots.Look !	Manhattan	Lower East Side
8	Cozy Room Family Home LGA Airport NO CLEANING FEE	Queens	East Elmhurst
9	Private brownstone studio Brooklyn	Brooklyn	Park Slope
10	LG Private Room/Family Friendly	Brooklyn	Bushwick
11	My Little Guest Room in Flushing	Queens	Flushing
12	Park Slope Green Guest House	Brooklyn	South Slope
13	Bright LARGE BED near Manhattan	Queens	East Elmhurst
14	Only Steps away from LaGuardia arpt	Queens	East Elmhurst
15	PRIVATE Room on Historic Sugar Hill	Manhattan	Harlem
16	yahmanscrashpads	Queens	Jamaica
17	Cozy Room in Lively East Village	Manhattan	East Village
18	Room steps away from LaGuardia airport	Queens	East Elmhurst
19	TriBeCa 2500 Sq Ft w/ Priv Elevator	Manhattan	Tribeca

# Unpopular Properties

- Total Number of unpopular properties 10050
- Localities with higher number of low-review properties: Williamsburg

Unpopular Properties Location



Unpopular Neighbourhood Group

Sr.No.	Neighbourho od Group	Total Number of Listings	Low Review Listings	% of Low Review
1	Manhattan	21661	5029	23.2
2	Brooklyn	20104	3657	18.2
3	Queens	5666	1092	19.3
4	Bronx	1091	215	19.7
5	Staten Island	373	59	15.8
Total		48895	10052	Avg. 20.6

Top 20 Neighbourhood

neighbourhood	neighbourhood_group	Sum of Low_review_01
Williamsburg	Brooklyn	757
Bedford-Stuyvesant	Brooklyn	573
Midtown	Manhattan	559
Bushwick	Brooklyn	521
Upper West Side	Manhattan	489
Harlem	Manhattan	452
Hell's Kitchen	Manhattan	426
Upper East Side	Manhattan	393
East Village	Manhattan	363
Crown Heights	Brooklyn	299
Chelsea	Manhattan	285
Greenpoint	Brooklyn	247
Financial District	Manhattan	235
Astoria	Queens	191
Washington Heights	Manhattan	178
Murray Hill	Manhattan	174
East Harlem	Manhattan	173
Lower East Side	Manhattan	173
West Village	Manhattan	158
Theater District	Manhattan	140
Kips Bay	Manhattan	133

# Appendix

## Data Source:

- Airbnb Listings data: <https://learn.upgrad.com/course/5701/segment/55499/338854/1024750/5125128>
- Geospatial data/shapefile of New York: <https://data.cityofnewyork.us/City-Government/NTA-map/d3qk-pfyz>

## Methodology:

- Data Acquisition
- Understanding Problem, objective, data
- Data Cleaning
- Data Analysis using Python, Power BI, Tableau, QGIS, Excel
- Insights
- recommendation

## Assumptions:

- Airbnb assumes that after covid-19 pandemic travel activity will increase.
- Identified customer preferences using the number of reviews given by customers.