AIRBNB BOOKINGS INSIGHTS (TABLEAU)

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COMPANY OVERVIEW

Airbnb, Inc. is an American San Francisco-based company operating an online marketplace for short- and long-term homestays and experiences. The company acts as a broker and charges a commission from each booking. The company was founded in 2008 and is a shortened version of its original name, AirBedandBreakfast.com. Airbnb is the most well-known company for short-term housing rentals.

Airbnb generated $8.3 billion in revenue in 2022, a 40% year-on-year increase
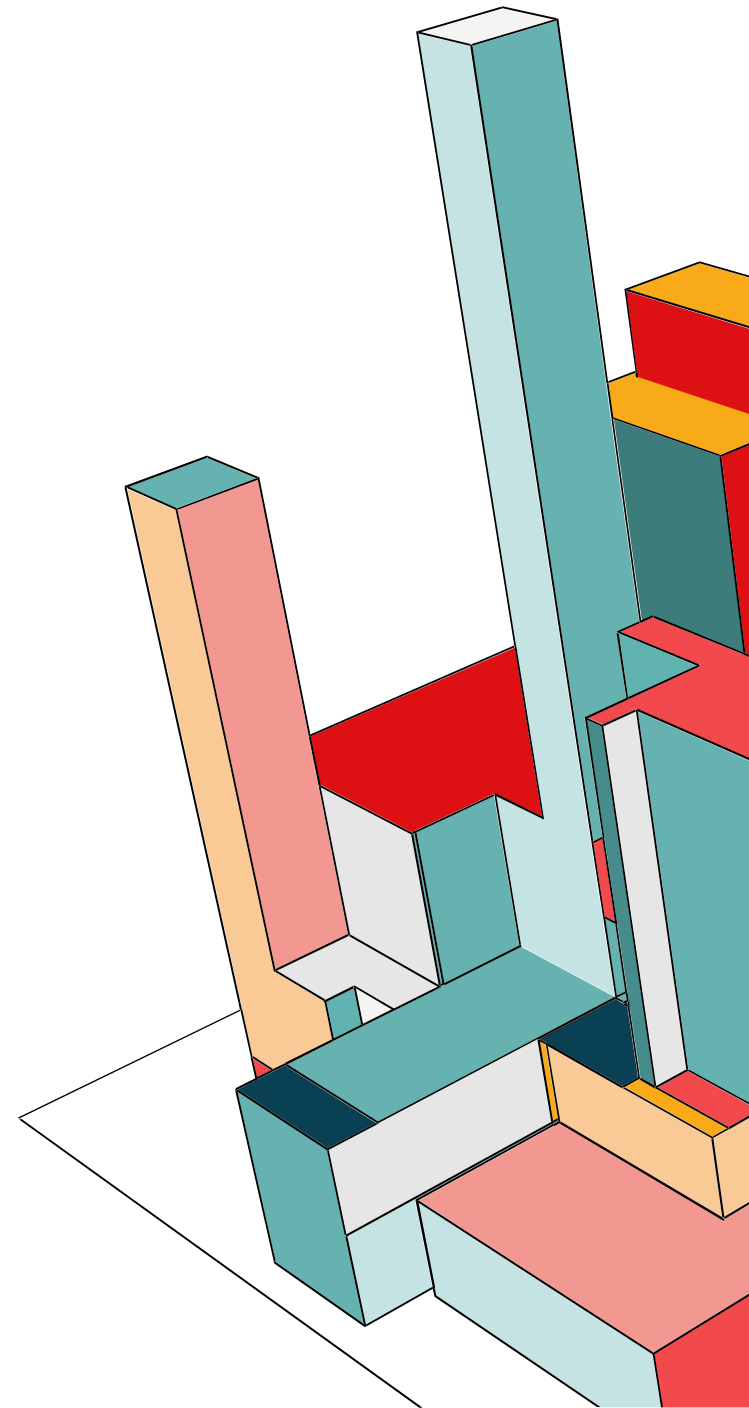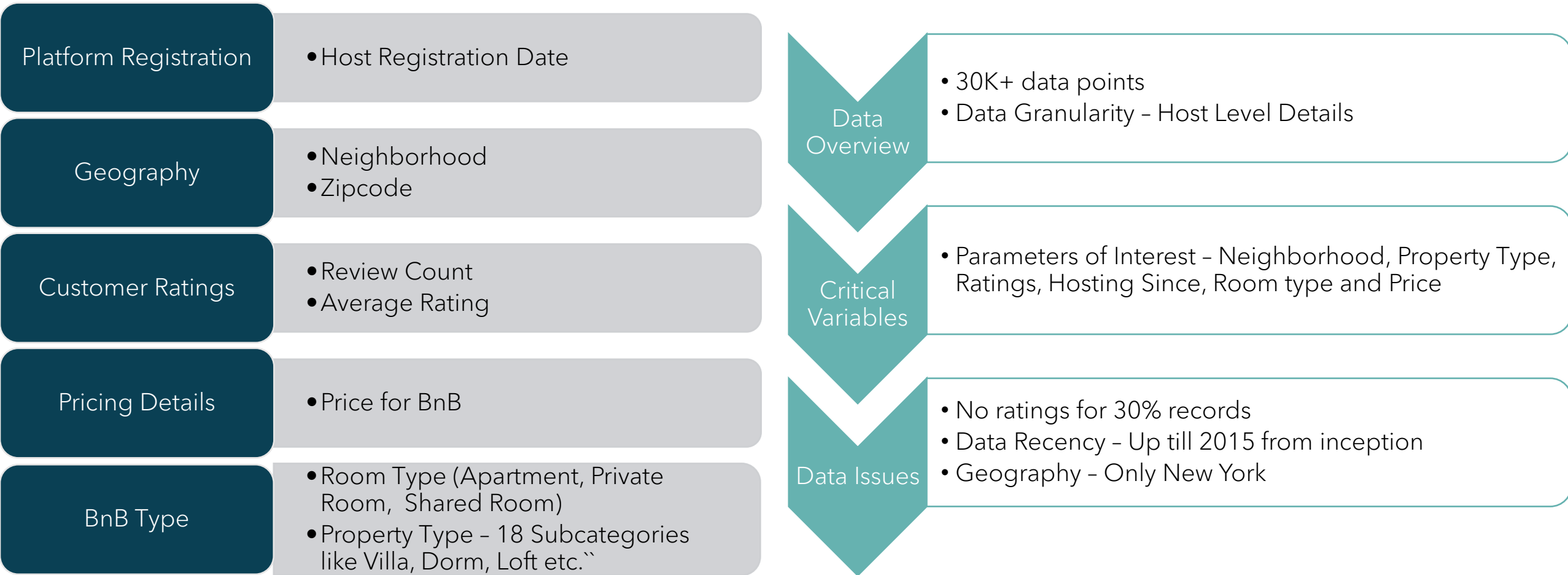
Airbnb has 200+ million users as of 2020

In 2022, 393 million bookings were made on Airbnb, a 31% increase on 2021

There were 6.6 million listings on Airbnb, run by four million hosts

Source – Business of Apps & Wikipedia

DATA OVERVIEW, VARIABLES & DATA ISSUES

Platform Registration	• Host Registration Date
Geography	• Neighborhood • Zipcode
Customer Ratings	• Review Count • Average Rating
Pricing Details	• Price for BnB
BnB Type	• Room Type (Apartment, Private Room, Shared Room) • Property Type – 18 Subcategories like Villa, Dorm, Loft etc.``

Data Overview
- 30K+ data points
- Data Granularity – Host Level Details

Critical Variables
- Parameters of Interest – Neighborhood, Property Type, Ratings, Hosting Since, Room type and Price

Data Issues
- No ratings for 30% records
- Data Recency – Up till 2015 from inception
- Geography – Only New York

INSIGHTS FROM THE ANALYSIS

Geographical Analysis

- Platform registration rate across geographies – Yearly and Monthly
- Impact of external events on registration rate
- Pricing and BNB type preference across geographies
- Forecasting future platform registration and pricing trends across geographies

Host Rating Analysis

- Correlation of ratings with pricing
- Most profitable cluster of hosts (High Review Count and High Price)
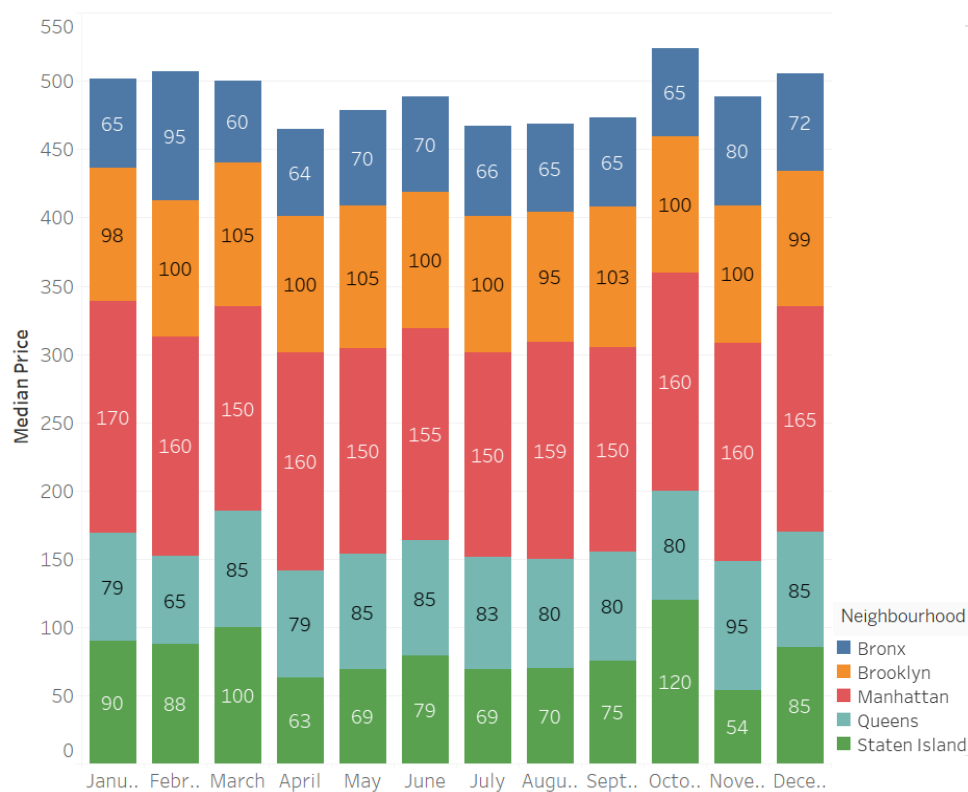- Dashboard of Top N Hosts across geographies and room categories

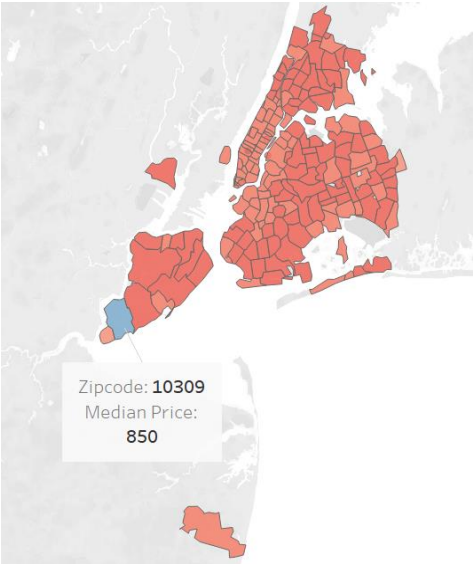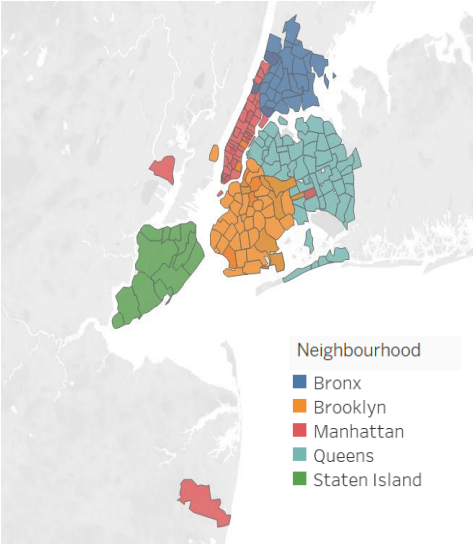# GEOGRAPHICAL REGISTRATION RATE – YEARLY AND MONTHLY
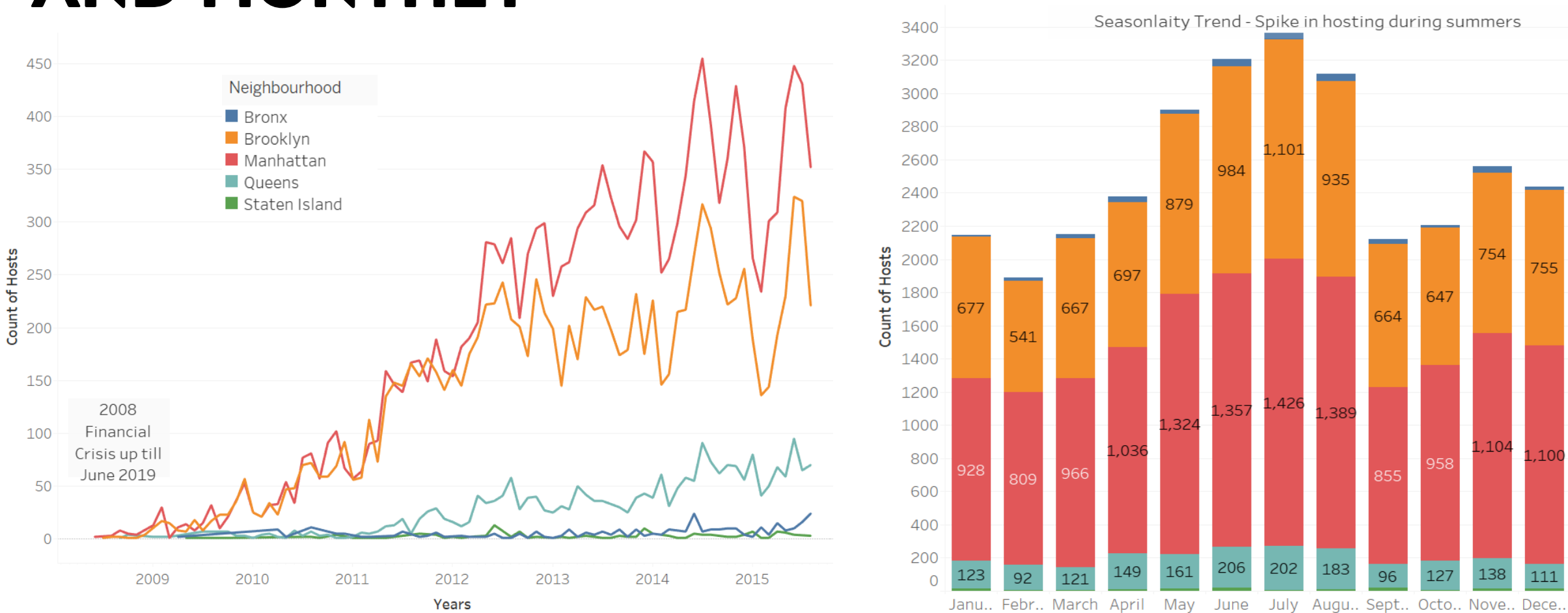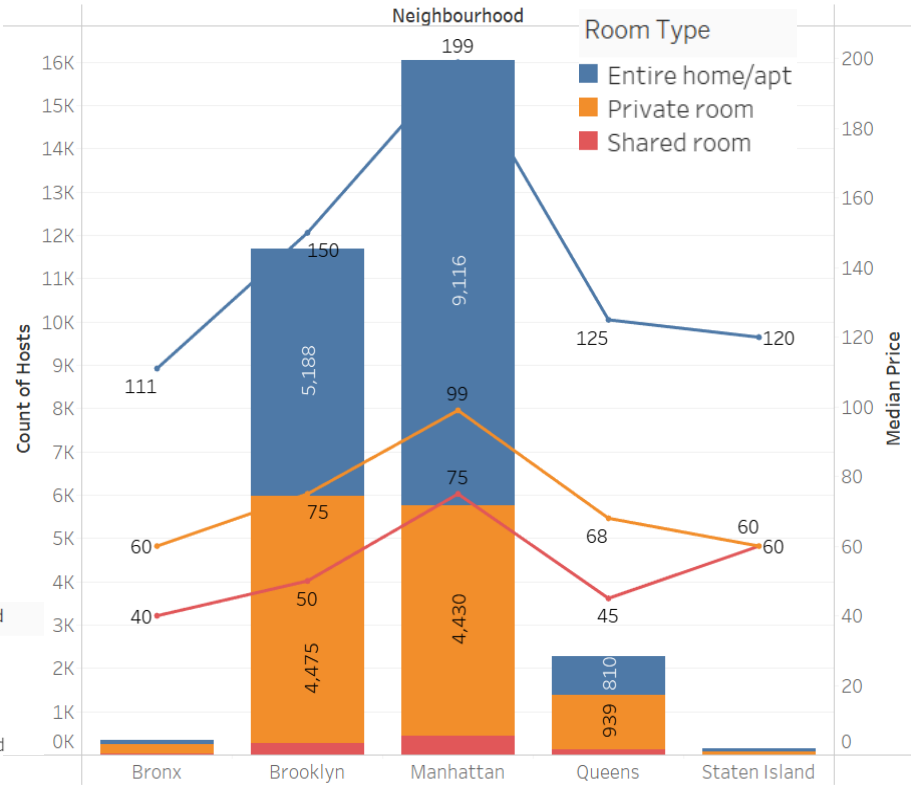

Manhattan and Brooklyn are witnessing a much faster growth in terms of host registration from 2011 onwards. We can also see seasonality in terms of host registration trend. There is a significant spike in registration on platform during the summers.

Financial Crisis Source - https://www.forbes.com/sites/qai/2022/10/19/how-long-did-the-great-recession-last-in-2008/?sh=3b2dc9bc56b0

GEOGRAPHICAL PRODUCT AND PRICING PREFERENCE

Pricing Seasonality

Neighborhood Price & Host Count By Room Type Details

Room Type
- Entire home/apt
- Private room
- Shared room

Neighbourhood
- Bronx
- Brooklyn
- Manhattan
- Queens
- Staten Island

More than 80% of listings across geographies are for Entire Home and Private Rooms
Owing to the area of the listing being higher the pricing for apartments is 2x times that for private rooms and shared rooms
Pricing does not have a lot of variance across months each year
Anomalies are present in data – prices in Staten Island (Zipcode – 10309) is much higher compared to overall distribution
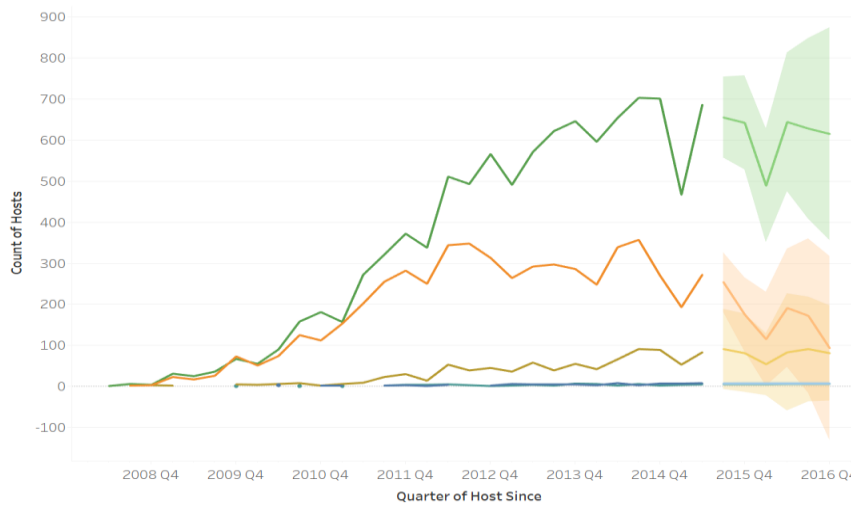
Zipcode: 10309
Median Price: 850

GEOGRAPHICAL REGISTRATION AND PRICING FORECAST

Platform Registration Forecast could not be generated on shared room type as sufficient data was not available.

Platfrom registration trend on All Room Types
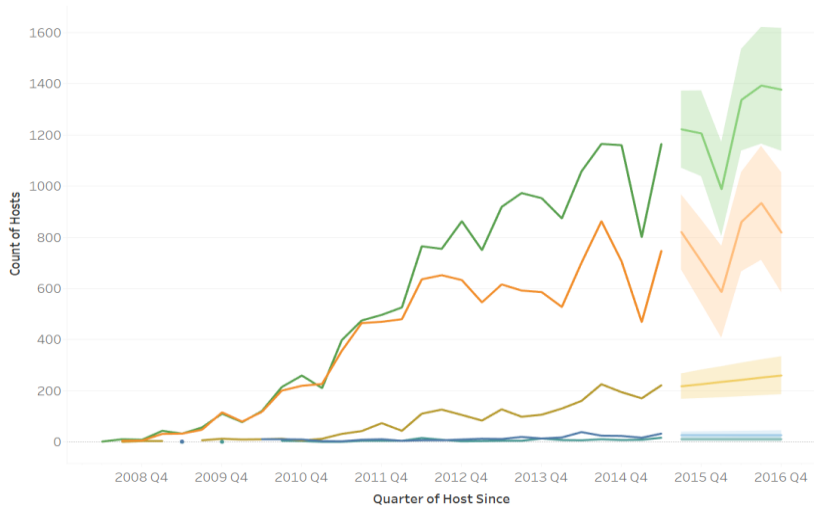
Platfrom registration trend on Entire home/apt Room Types

Platfrom registration trend on Private room Room Types
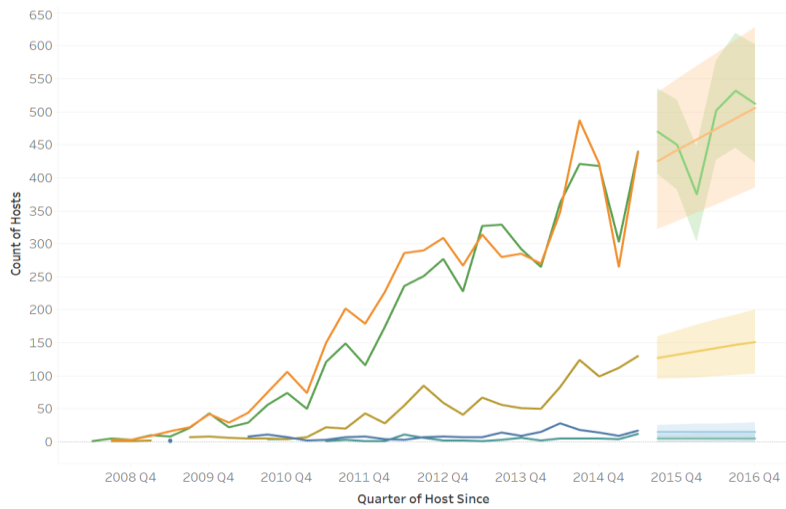
- Registration trend shall be going up in subsequent quarters but only for shared and private rooms. Dip in registration is anticipated for apartments.
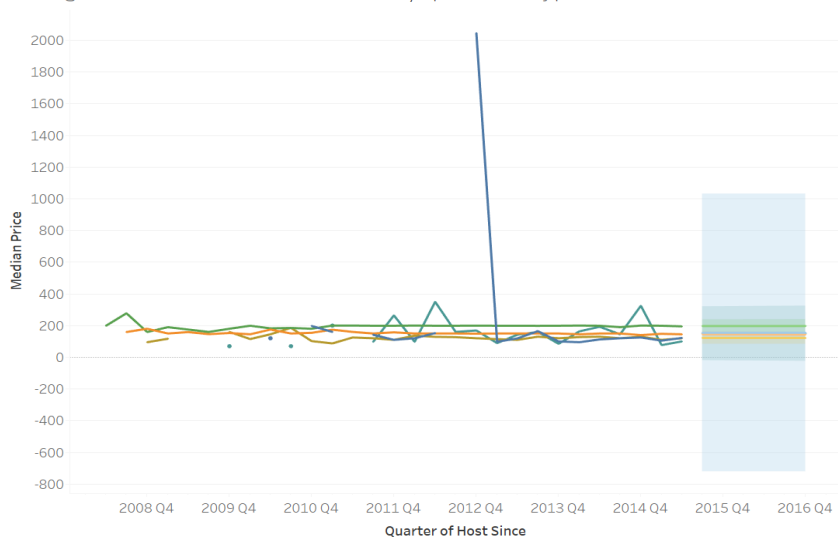- Pricing will stay as it is without much variance anticipated in the median pricing.
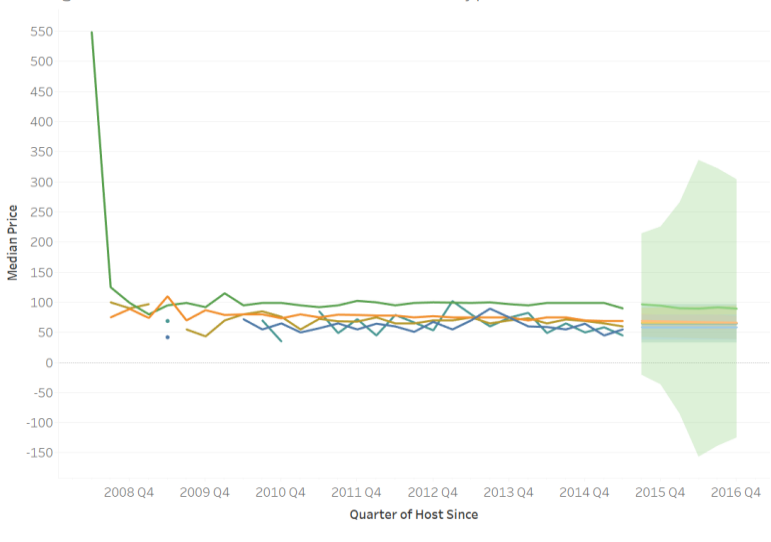
Pricing forecast trend on All Room Types
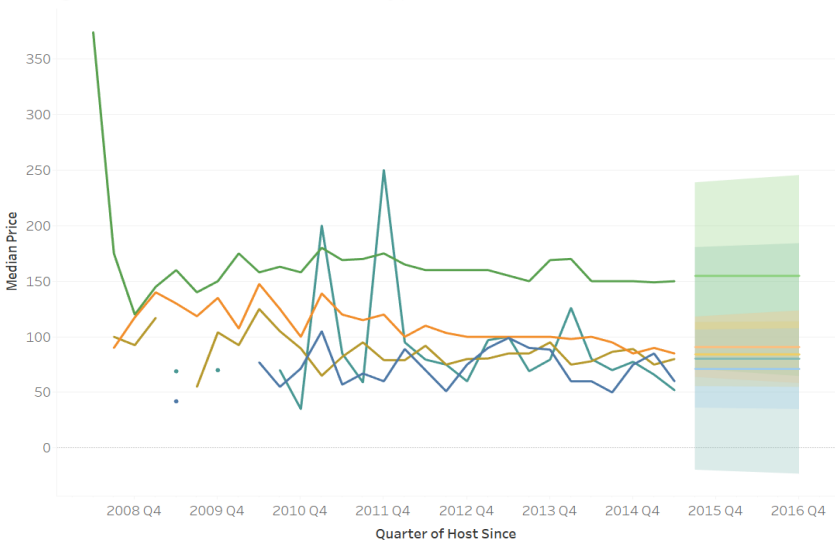
Pricing forecast trend on Entire home/apt Room Types

Pricing forecast trend on Private room Room Types

HOST RATING ANALYSIS – CORRELATION BETWEEN PRICING AND RATING

Correlation Heatmap - 100+ Reviews

Room Type	Bronx	Brooklyn	Neighbourhood Manhattan	Queens	Staten Island
Entire home/apt		0.370	0.247	0.190	
Private room	-1.000	0.391	0.220	0.329	1.000
Shared room			0.611		

Correlation Heatmap - All

Room Type	Bronx	Brooklyn	Neighbourhood Manhattan	Queens	Staten Island
Entire home/apt	0.125	0.083	0.049	0.079	-0.713
Private room	0.214	0.121	0.139	0.100	-0.119
Shared room	0.416	-0.020	-0.063	-0.019	

Correlation Heatmap - 50 - 100 Reviews

Room Type	Bronx	Brooklyn	Neighbourhood Manhattan	Queens	Staten Island
Entire home/apt		0.226	0.176	0.285	-0.276
Private room	0.761	0.345	0.232	0.355	0.388
Shared room		1.000	0.209	-0.228	

Correlation Heatmap - 10 - 50 Reviews

Room Type	Bronx	Brooklyn	Neighbourhood Manhattan	Queens	Staten Island
Entire home/apt	0.016	0.140	0.087	0.094	-0.479
Private room	0.298	0.215	0.234	0.303	-0.243
Shared room	0.689	0.345	0.189	0.269	

Correlation Heatmap - <= 10 Reviews

Room Type	Bronx	Brooklyn	Neighbourhood Manhattan	Queens	Staten Island
Entire home/apt	0.156	0.065	0.030	0.076	-0.731
Private room	0.181	0.098	0.118	0.053	-0.195
Shared room	0.357	-0.087	-0.093	-0.074	

- Geographically, customers in Staten Island are extremely price sensitive and it seems to have some negative impact on the BnB ratings.
- Customer profile wise, private room and shared room customers are more price sensitive compared to users booking apartments.
- From a vintage standpoint, post garnering more than 50 reviews price doesn't seem to impact the rating much.

HOST RATING ANALYSIS – MOST PROFITABLE CLUSTER OF HOSTS

Host Clusters

Clusters
- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
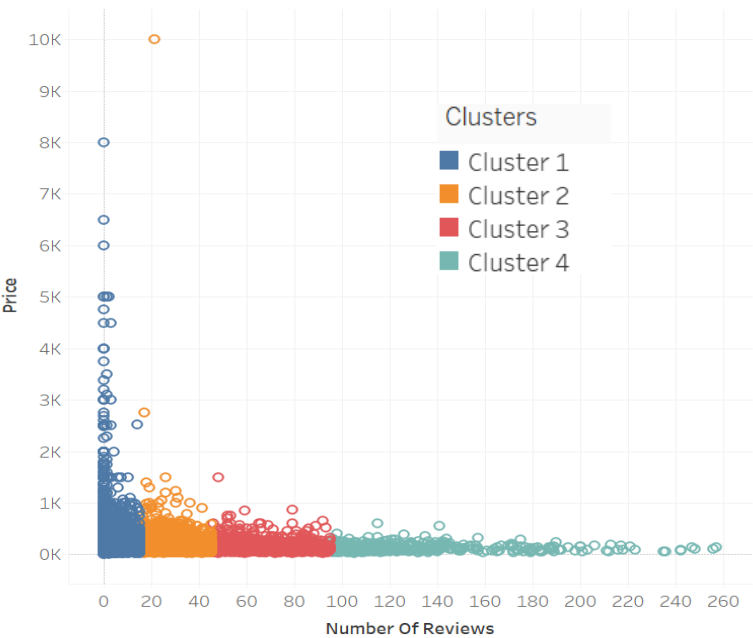
Summary Diagnostics

Number of Clusters:	4
Number of Points:	30478
Between-group Sum of Squares:	200.52
Within-group Sum of Squares:	34.371
Total Sum of Squares:	234.89

Centers

Clusters	Number of Items	Sum of Number Of Reviews	Sum of Price
Cluster 1	23792	3.3488	166.2
Cluster 2	4543	26.858	160.18
Cluster 3	1693	63.377	146.02
Cluster 4	450	127.38	126.23
Not Clustered	0		

- Using K-means clustering on review count and price we were able to create 4 clusters of hosts. As we can see that hosts in cluster 2 are most profitable as they have a higher review count and median price of 160. 2nd most profitable cluster of hosts is cluster 3, they have higher review count, but their median price is slightly lower than that of cluster 2.
- The reason we claim that these customers are profitable is because of higher pricing (which means more commission for Airbnb) and higher review count (higher popularity, which will lead to higher bookings in future)

Analysis of Variance:

Variable	F-statistic	p-value	Model Sum of Squares	DF	Error Sum of Squares	DF
Sum of Number Of Reviews	9136.0	0.0	200.5	3	222.9	30474
Sum of Price	11.64	1.281e-07	0.01369	3	11.95	30474

PREFERRED PROPERTY TYPE ACROSS GEOGRAPHIES

- Across all the geographies we can see that the predominant listings are those of apartments and homes and the preference is majorly for complete houses and private rooms.

Review Count - Geo BNB Stats (Geo Parameter Linked)

Neighbou..	Property Type	Total Review ..	Rank - ..	Entire home/apt	Private room	Shared room
Brooklyn	Apartment	107,482	1	59,123	47,183	1,176
	House	18,293	2	7,965	10,155	173
	Loft	7,221	3	2,989	4,005	227
	Bed & Breakfast	1,366	4	197	1,159	10
	Townhouse	279	5			
			6	148	131	
	Condominium	335	5	135	200	
	Other	136	6			2
			7	85	49	
	Dorm	103	7			14
			8	19		
			9		70	
	Chalet	128	8		128	
	Boat	56	9	56		
	Camper/RV	25	10	25		
	Treehouse	4	8			2
			10		2	
	Lighthouse	4	11	4		
	Villa	0	12	0		
	Tent	0	11		0	
	Bungalow	0	12	0		

Review Count - Geo BNB Stats (Geo Parameter Linked)

Neighbou..	Property Type	Total Review ..	Rank - ..	Entire home/apt	Private room	Shared room
Manhattan	Apartment	191,341	1	119,880	66,922	4,539
	Loft	3,921	2	2,344	1,533	44
	House	2,721	3	1,776	945	0
	Bed & Breakfast	1,727	4	191	1,536	0
	Other	215	5	101	68	46
	Townhouse	205	6	97	108	
	Condominium	114	7	102	12	
	Villa	104	8	3	101	
	Null	52	9	24	28	
	Hut	46	10		46	
	Treehouse	36	6			36
	Dorm	17	7			3
			11		14	
	Cabin	19	10	19		
	Tent	2	12		2	
	Castle	2	12		2	
	Camper/RV	0	11	0		
	Boat	0	11	0		
			13		0	

Review Count - Geo BNB Stats (Geo Parameter Linked)

Neighb..	Property Type	Total Review ..	Rank - ..	Entire home/apt	Private room	Shared room
Queens	Apartment	16,178	1	6,771	8,717	690
	House	7,687	2	1,840	5,499	348
	Loft	275	3			0
			4	182	93	
	Bed & Breakfast	385	3	17	368	
	Other	121	5	58	63	
	Townhouse	101	6	1	100	
	Dorm	71	4			3
			7		68	
	Camper/RV	49	8	46	3	
	Boat	90	7	90		
	Villa	25	9	8	17	
	Bungalow	22	10	22		
	Condominium	10	11	10		
	Cabin	5	10		5	
	Hut	0	11		0	

Review Count - Geo BNB Stats (Geo Parameter Linked)

Neighb..	Propert..	Total Review ..	Rank - ..	Entire home/apt	Private room	Shared room
Staten Island	House	1,063	1	362	701	0
	Apartment	859	2	326	533	
	Other	34	3		34	
	Bed & Breakfast	4	2			0
			3	4		
	Townhouse	2	4	0	2	
	Loft	0	5	0		

Review Count - Geo BNB Stats (Geo Parameter Linked)

Neighb..	Property Type	Total Review ..	Rank - ..	Entire home/apt	Private room	Shared room
Bronx	Apartment	1,928	1	373	1,497	58
	House	1,405	2	302	1,033	70
	Loft	30	3	16	14	
	Townhouse	3	4	3		
			5		0	
	Bed & Breakfast	5	4		5	
	Condominium	1	5	0		
			6		1	

THANK YOU