Airbnb Uncovered

Analysing Host Practices, Pricing Strategies, and User Satisfaction

Airbnb, headquartered in San Francisco, California, has witnessed exponential growth over the years, making it imperative to understand the nuances of its listings, host dynamics, and user experiences. This analysis focuses on key areas such as district location scores (NYC only), host response times, pricing trends, composite scores, listing age, and more.

The purpose of this analysis is multi-faceted. It aims to uncover insights into district-level performance (NYC), identify factors influencing overall ratings, visualise pricing trends, and assess the impact of various attributes on user satisfaction. Through a systematic exploration of the provided datasets, it is intended to equip stakeholders with actionable intelligence that can inform decision-making, improve host practices, and enhance the overall Airbnb experience for both hosts and guests.

Data Description

The dataset provided for this analysis encompasses detailed information related to Airbnb listings and reviewer scores on a global scale. Key variables include listing characteristics such as: host details, location attributes, pricing, property types, room types, amenities, and various review scores covering aspects like accuracy, cleanliness, check-in experience, communication, location, and overall value.

Data Cleaning & Transformation

Before diving into the analysis, a rigorous data cleaning and pre-processing phase were conducted to ensure the accuracy and reliability of the findings.
Key steps included:

Handling Missing Data:
- Replaced missing data with 'NA' in categorical columns- 'host_response_time', 'district', 'name'
- 'district' was blank for all cities except for New York
- Missing data in numerical columns- 'host_response_rate', 'host_acceptance_rate'
- Missing data in the columns were not imputed because the missing data % was beyond the accepted threshold considered safe for imputation

Duplicacy:
- Checked for the duplicacy in Listings[Listings ID] by creating a calculated column 'DuplicateFlag'

Data Type Conversion:
Ensured consistency in data types, converting variables to the appropriate format for analysis.

Analytical Techniques & Tools

Descriptive Analytics:
Descriptive analytics techniques, such as summary statistics and visualizations, were employed to provide an initial overview of the dataset and highlight key trends.

Correlation Analysis:
Correlation analysis was utilized to explore relationships between variables, with a particular focus on understanding the impact of host response times on overall ratings.

Composite Score Calculation:

A composite score was calculated by combining check-in experience and host communication scores, providing a holistic measure of guest satisfaction.

Time-Series Analysis:

Time-series analysis techniques were applied to examine trends in average ratings among older listings, offering valuable insights into the relationship between listing age and user satisfaction.
Also, a comparison analysis on monthly visitors trend was done to understand the business impact of 2020 vs 2019

Note: For a detailed technical document, refer to: 'Technical document.md'

ANALYSIS GOALS

Assessing District Location Scores:
   • The aim is to pinpoint the location in the district with the least favourable location scores.

Examining Host Response Time Impact:
   • The goal is to delve into the relationship between host response times and the overall ratings of Airbnb listings providing valuable insights.

Visualising Airbnb Listing Prices
   • The objective is to create visual representations of Airbnb listing prices across different cities and summarize any noteworthy trends or variations.

Analysing Composite Scores
   • The task involves creating a composite score that integrates check-in experience and host communication for various districts with subsequent analysis and insights.

Calculating Listing Age & Host Tenure
   • This objective entails computing the age of Airbnb listings and identifying hosts who have accumulated more than ten years of hosting expertise.

Property Type Price Analysis
   • The task involves the creation of a visual tree map that displays average prices for various room and property types with specific attention given to the property type associated with the highest prices for entire places.
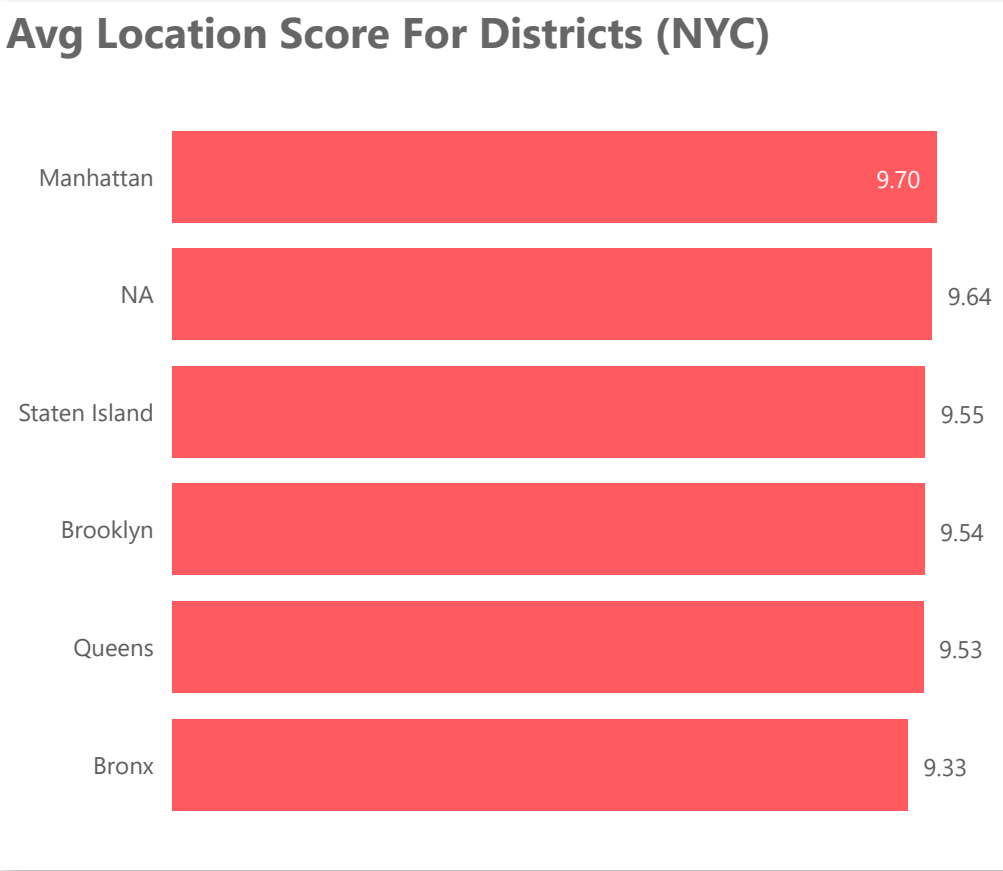
Crafting A Comprehensive City Insights Report
   • This objective entails the creation of a comprehensive report that presents listing prices, guest ratings, and visitor trends for multiple cities, with a particular focus on assessing changes in visitor trends in 2020 in contrast to earlier years.

ANALYSIS

All ▼

Avg Location Score For Districts (NYC)

District	Score
Manhattan	9.70
NA	9.64
Staten Island	9.55
Brooklyn	9.54
Queens	9.53
Bronx	9.33

Location Score By Listings

Listing ID	Name	Location Score
2577	Loft for 4 by Canal Saint Martin	10
2595	Skylit Midtown Castle	10
3079	Cozy apartment (2-4)with Colisseum view	10
3109	zen and calm	10
3191	Malleson Garden Cottage	10
3831	Whole flr w/private bdrm, bath & kitchen(pls read)	10
5178	Large Furnished Room Near B'wayã€€	10
5203	Cozy Clean Guest Room - Family Apt	10
5396	Explore the heart of old Paris	10
5803	Lovely Room 1, Garden, Best Area, Legal rental	10
6990	UES Beautiful Blue Room	10
7097	Perfect for Your Parents: Privacy + Garden	10
7397	MARAIS - 2ROOMS APT - 2/4 PEOPLE	10
7801	Sweet and Spacious Brooklyn Loft	10
7964	Large & sunny flat with balcony !	10
8490	Maison des Sirenes1,bohemian, luminous apartment	10
9357	Midtown Pied-a-terre	10

• It is observed that the district with the least average location score is **Bronx (9.33/10)** and the highest average location score is **Manhattan (9.70/10)**
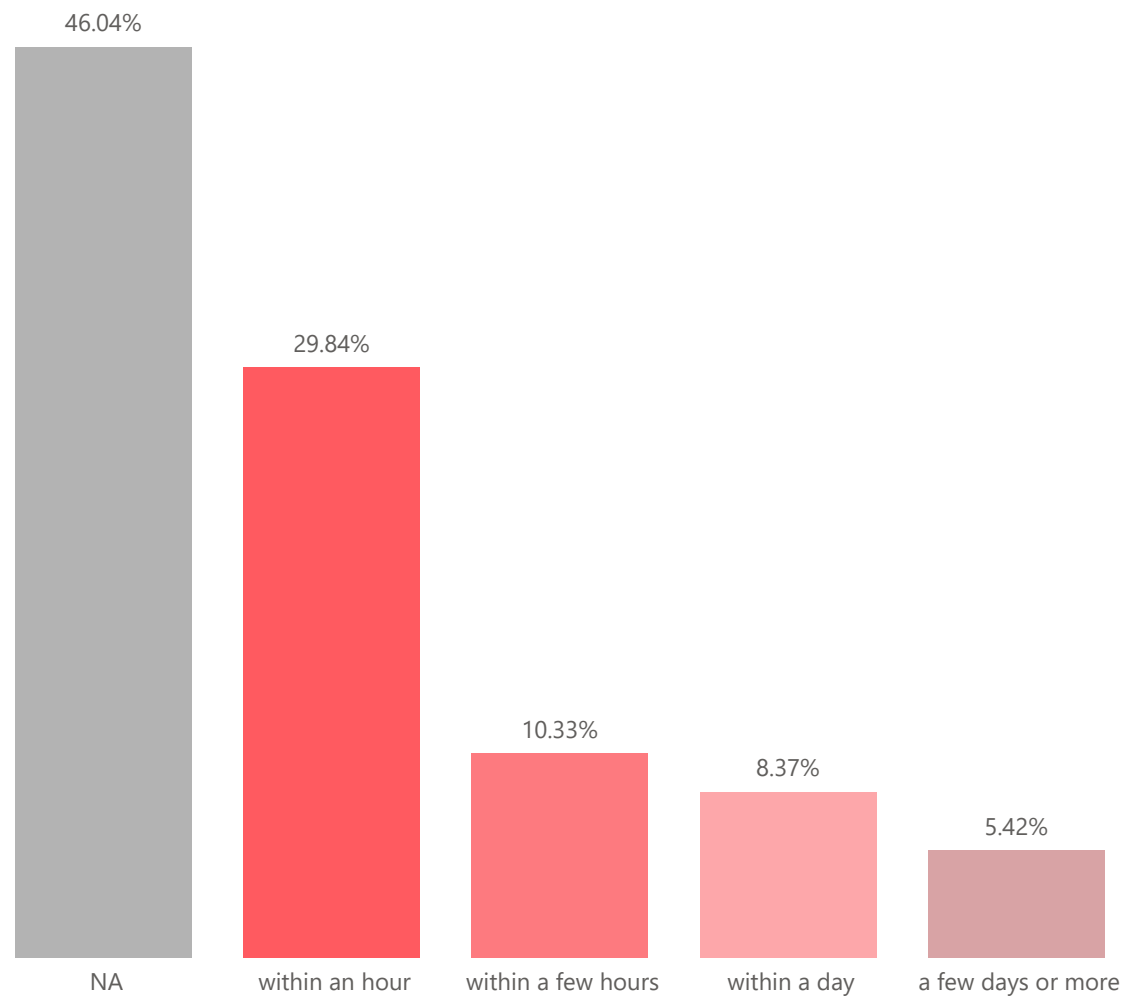
Note: Except <u>New York City,</u> there are no district data available for other cities in the data. Therefore, 'NA' in the district chart represents all the other cities without an associated district data

• The above table provides a more granular view of location score listing-wise

All

Host Response Time Distribution

- A significant amount of data is missing for this column represented by 'NA' (**46.04**%)

- *However, the majority of hosts, at least amongst those who have specified a timeframe, respond within an hour (**29.84**%), indicating a high level of responsiveness*

- *However, further investigation needs to be made towards the factors contributing to the **5.42**% of hosts who take a few days or more to respond*

Impact of Host Response Time On Overall Ratings

93.91 — within a few hours
93.80 — within an hour
93.51 — within a day
92.91
90.42 — a few days or more
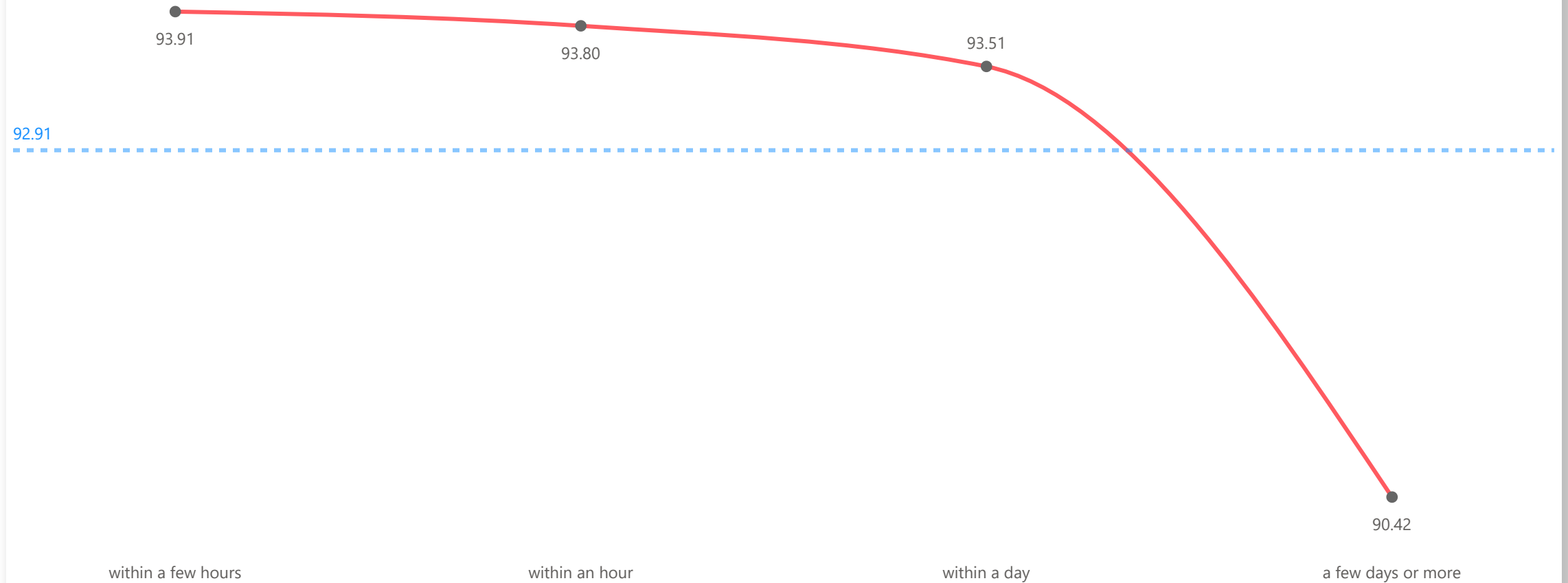
- It is observed that as the host response time increases the overall average ratings of a listing decreases

- The rating of the listing decreases by **1.163 points** on average as the response time increases

- Given the observation that as host response time increases, the overall ratings of a listing tend to decrease, it is crucial to streamline communication and enhance the efficiency of host response time

Average Price Across cities
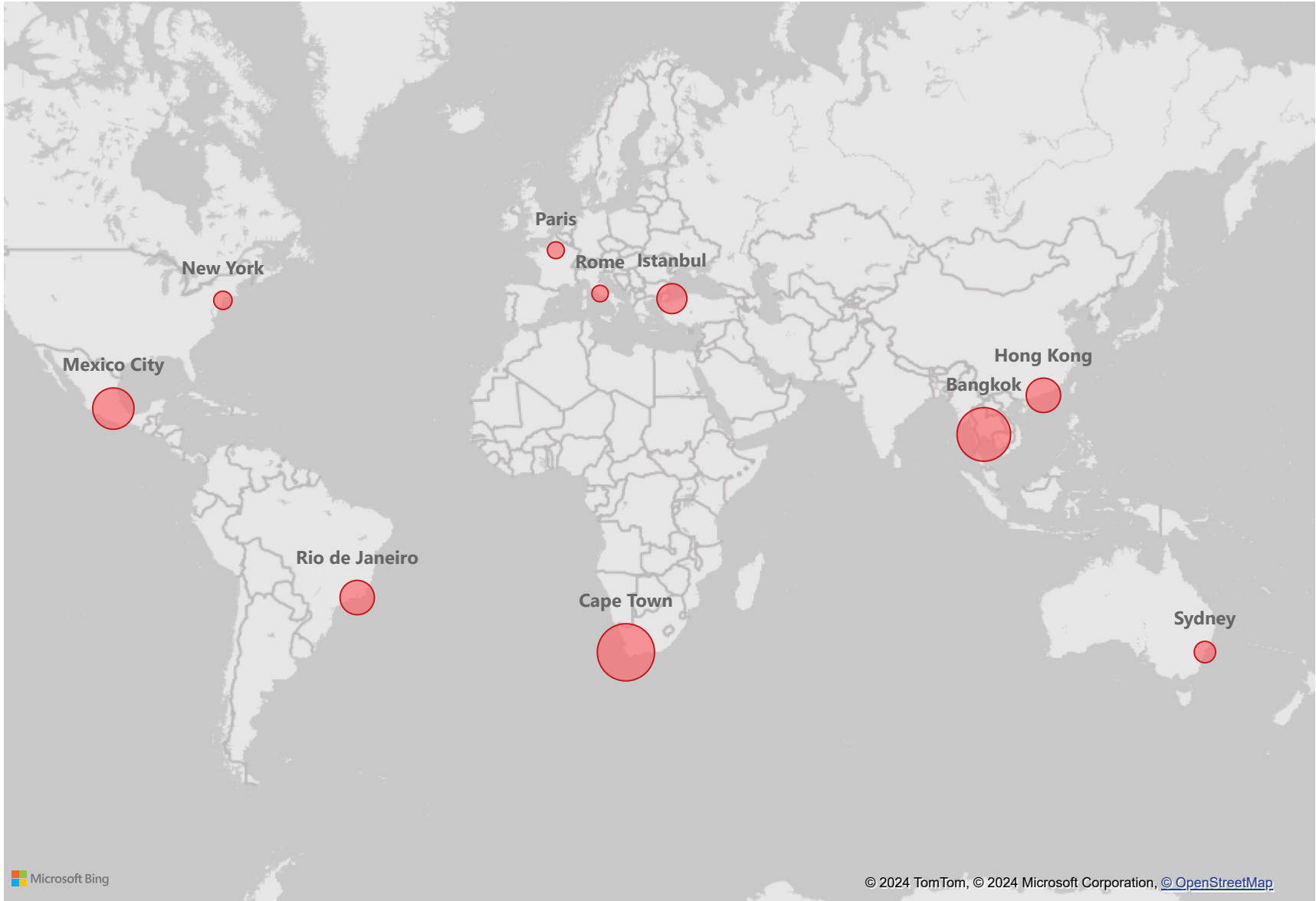
Cape Town
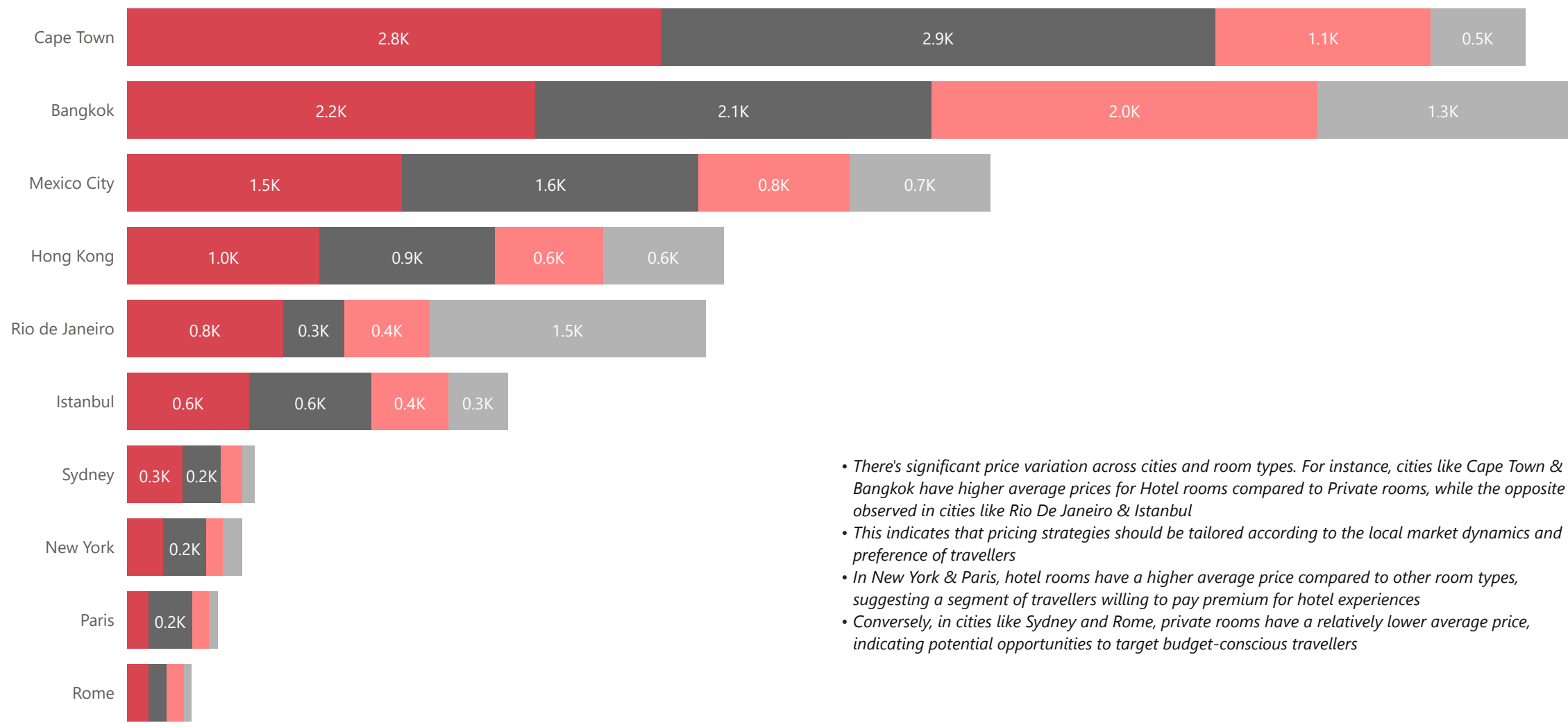City with the highest average price
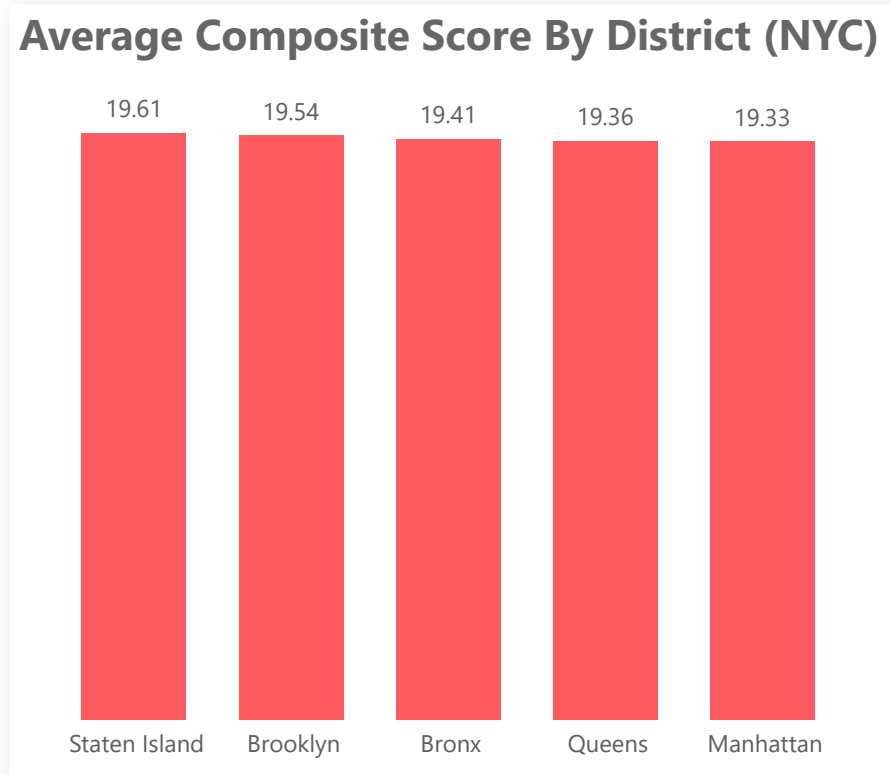
$2,405.12

Rome
City with the lowest average price

$105.11

Average Listing Price Across Cities By Room Type

Room type ●Entire place ●Hotel room ●Private room ●Shared room

City	Entire place	Hotel room	Private room	Shared room
Cape Town	2.8K	2.9K	1.1K	0.5K
Bangkok	2.2K	2.1K	2.0K	1.3K
Mexico City	1.5K	1.6K	0.8K	0.7K
Hong Kong	1.0K	0.9K	0.6K	0.6K
Rio de Janeiro	0.8K	0.3K	0.4K	1.5K
Istanbul	0.6K	0.6K	0.4K	0.3K
Sydney	0.3K	0.2K		
New York		0.2K		
Paris		0.2K		
Rome				

- *There's significant price variation across cities and room types. For instance, cities like Cape Town & Bangkok have higher average prices for Hotel rooms compared to Private rooms, while the opposite is observed in cities like Rio De Janeiro & Istanbul*
- *This indicates that pricing strategies should be tailored according to the local market dynamics and preference of travellers*
- *In New York & Paris, hotel rooms have a higher average price compared to other room types, suggesting a segment of travellers willing to pay premium for hotel experiences*
- *Conversely, in cities like Sydney and Rome, private rooms have a relatively lower average price, indicating potential opportunities to target budget-conscious travellers*

Average Composite Score By District (NYC)

Staten Island	Brooklyn	Bronx	Queens	Manhattan
19.61	19.54	19.41	19.36	19.33

Average Composite Score By City

Mexico City	Rio de Janeiro	Rome	Cape Town	New York	Sydney	Paris	Bangkok	Istanbul	Hong Kong
19.56	19.55	19.47	19.45	19.43	19.40	19.39	19.18	19.04	18.85

Composite scores are the combined score of check-in and communication rating

- *Staten Island stands out with an impressive average of 19.61/20*
- *Followed closely by Brooklyn (19.54), Bronx (19.41), Queens (19.36), and Manhattan (19.33).*
- *These results indicate strong performance in check-in experience and host communication, with Staten Island leading the way in guest satisfaction.*
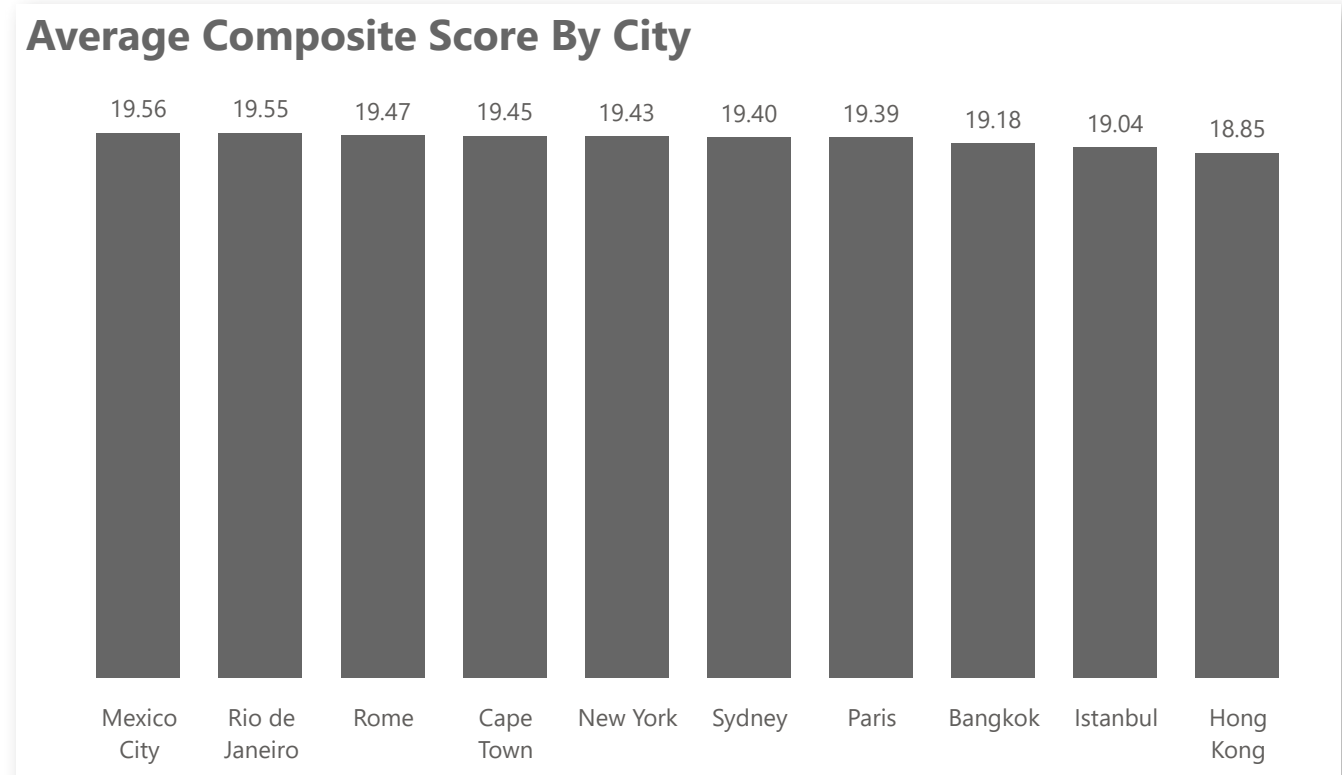
- *The city with the highest average composite score is Mexico City (19.56/20)*
- *The city with the lowest average composite score is Hong Kong (18.85/20)*
- *Investigation required on the factors contributing to the lower average composite score in Hong Kong. Further analysis on guest reviews and feedback would help identify specific areas for improvement*
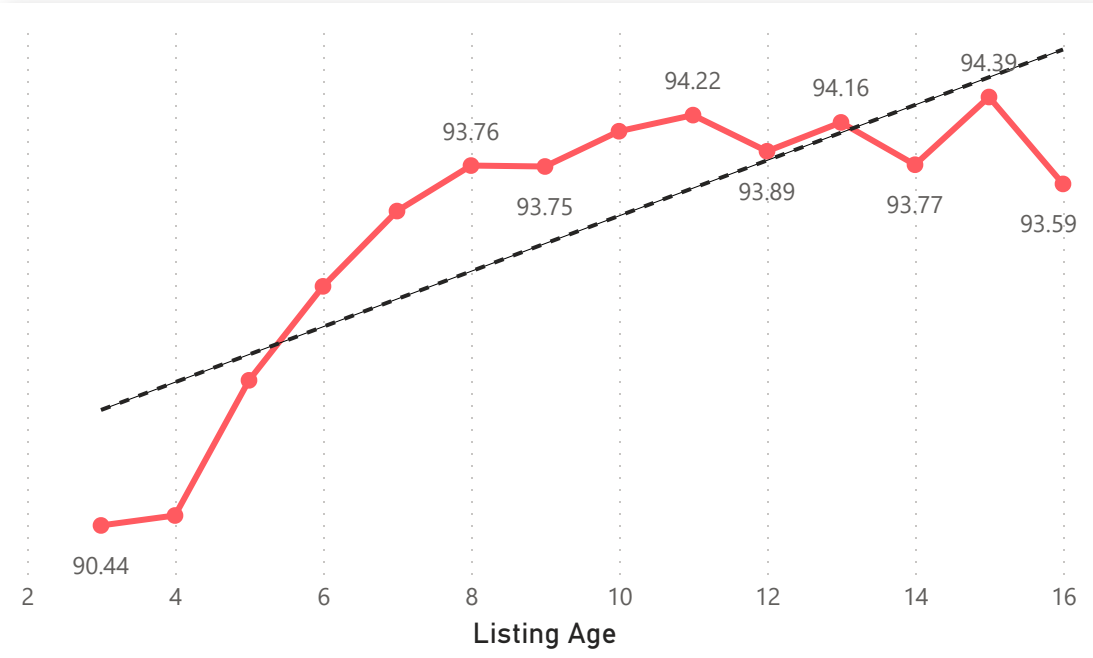
51K

Total Listings with 10+ Years of Tenure

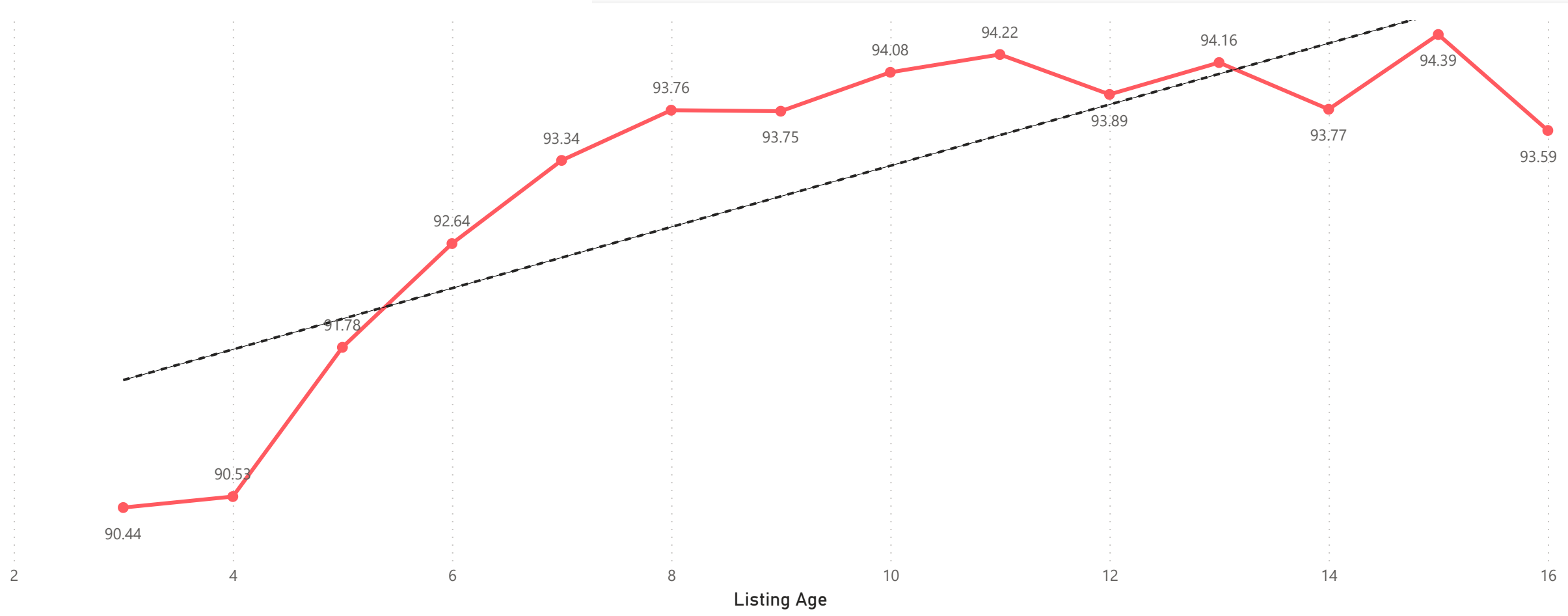## Average Ratings By Listing Age

- *In most cities, there is a trend of increased average ratings amongst older listings*

Host With 10+ Years Of Tenure

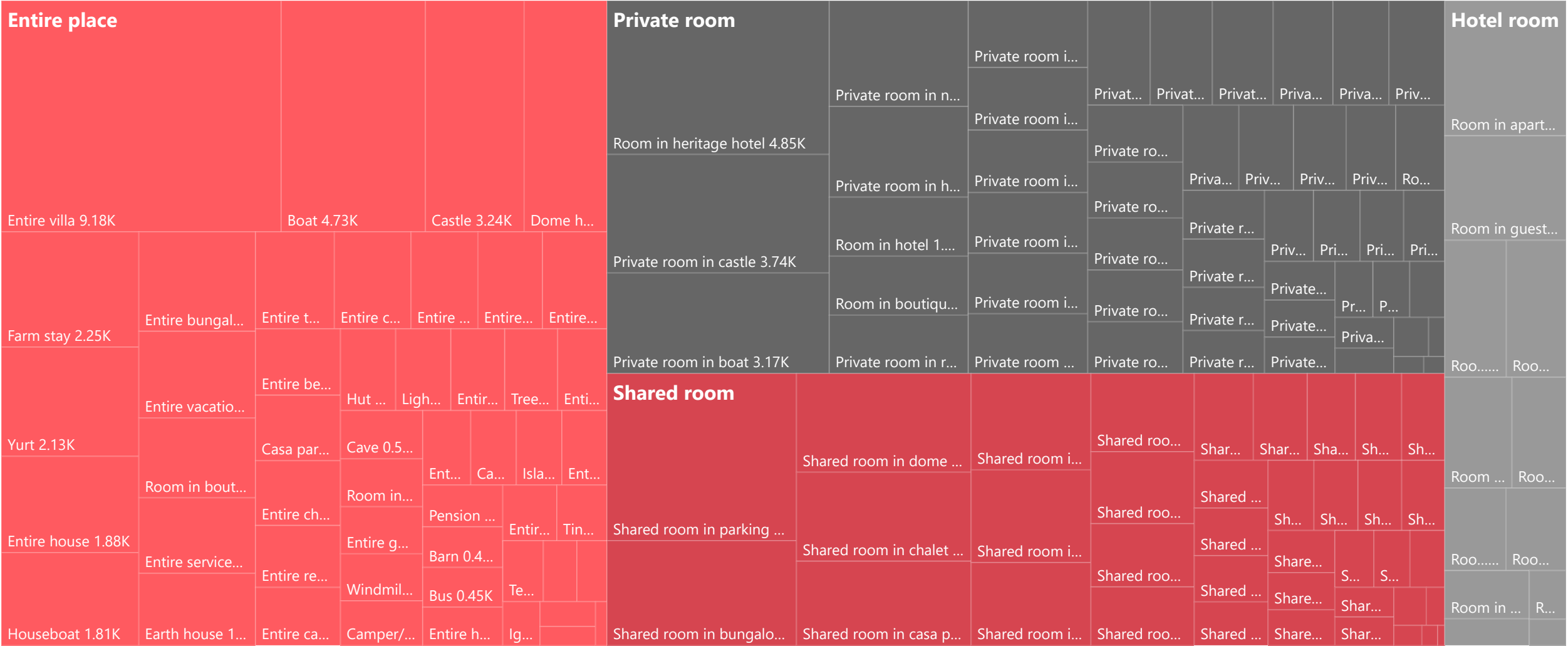| Host ID	Listing Name	Listing Age/Host Tenure (In Years)
2330	2bdr Apartment 150mOstia Rome Beach	16
3607	Appartement cosy au cÅ"ur de Botafogo	16
3280	B&B Calisto6 great location in Rome	16
3047	Beautiful cosy room with a balcony.	16
4170	Bohemian grove in Rome	16
3280	Calisto6 B&B in the heart of Rome	16
1944	Camera arredata zona Stella Polare in apt	16
1944	Circo Massimo hystorical Rome apt sleeps 5 people	16
3047	Cloe, beautiful room in cozy, clean flat.	16
3504	Colisseum brand new flat with private courtyard	16
3504	Colisseum bright studio in Monti neighborhood	16
3504	Colisseum charming flat (2-7pax)	16
1944	Colosseo/FAO fab wide apt sleeps 4 people	16
4396	Comfy Room in Amazing East Village Apt	16
2787	Corona free and clean. Liguria room.	16
2787	Corona free. Clean and Quiet Queen Bedroom	16
2787	Corona free. Torre del Lago Room.	16
2787	Corona free. Riomaggiore Queen Bedroom in Bklyn	16

12

Average Ratings By Listing Age

- *Hosts can be encouraged to commit to long-term hosting by highlighting the correlation between older listings and increased average ratings*

Average Price By Room Type & Property Type

Room Type ● Hotel room ● Entire place ● Shared room ● Private room

Entire place

Entire villa 9.18K

Boat 4.73K

Castle 3.24K

Dome h...

Farm stay 2.25K

Entire bungal...

Entire t... Entire c... Entire ... Entire... Entire...

Entire vacatio...

Entire be...

Hut ... Ligh... Entir... Tree... Enti...

Yurt 2.13K

Room in bout...

Casa par...

Cave 0.5...

Ent... Ca... Isla... Ent...

Entire ch...

Room in...

Pension ...

Entir... Tin...

Entire house 1.88K

Entire g...

Barn 0.4...

Entire service...

Entire re...

Windmil...

Bus 0.45K

Te...

Houseboat 1.81K

Earth house 1...

Entire ca...

Camper/...

Entire h...

Ig...

Private room

Private room i...

Private room in n...

Private ro...

Privat... Privat... Privat... Priva... Priva... Priv...

Room in heritage hotel 4.85K

Private room i...

Private room in h...

Private room i...

Private ro...

Priva... Priv... Priv... Priv... Ro...

Private ro...

Room in hotel 1....

Private room i...

Private r...

Priv... Pri... Pri... Pri...

Private room in castle 3.74K

Private ro...

Private r...

Private...

Room in boutiqu...

Private room i...

Private ro...

Private r...

Private...

Pr... P...

Priva...

Private room in boat 3.17K

Private room in r...

Private room ...

Private ro...

Private r...

Private...

Shared room

Shared roo...

Shar... Shar... Sha... Sh... Sh...

Shared room in dome ...

Shared room i...

Shared room in parking ...

Shared roo...

Shared ...

Sh... Sh... Sh... Sh...

Shared room in chalet ...

Shared room i...

Shared roo...

Shared ...

Shared roo...

Share...

S... S...

Shared room in bungalo...

Shared room in casa p...

Shared room i...

Shared roo...

Shared ...

Share...

Shar...

Hotel room

Room in apart...

Room in guest...

Roo... Roo...

Room ... Roo...

Roo... Roo...

Room in ... R...

*Under Room Type- **Entire Place,** Property Type- **Entire villa** has the highest average price of 9.18K USD*

Monthly Visitor Trend: 2019 VS 2020

● No of Visitors 2019 ● No of Visitors 2020
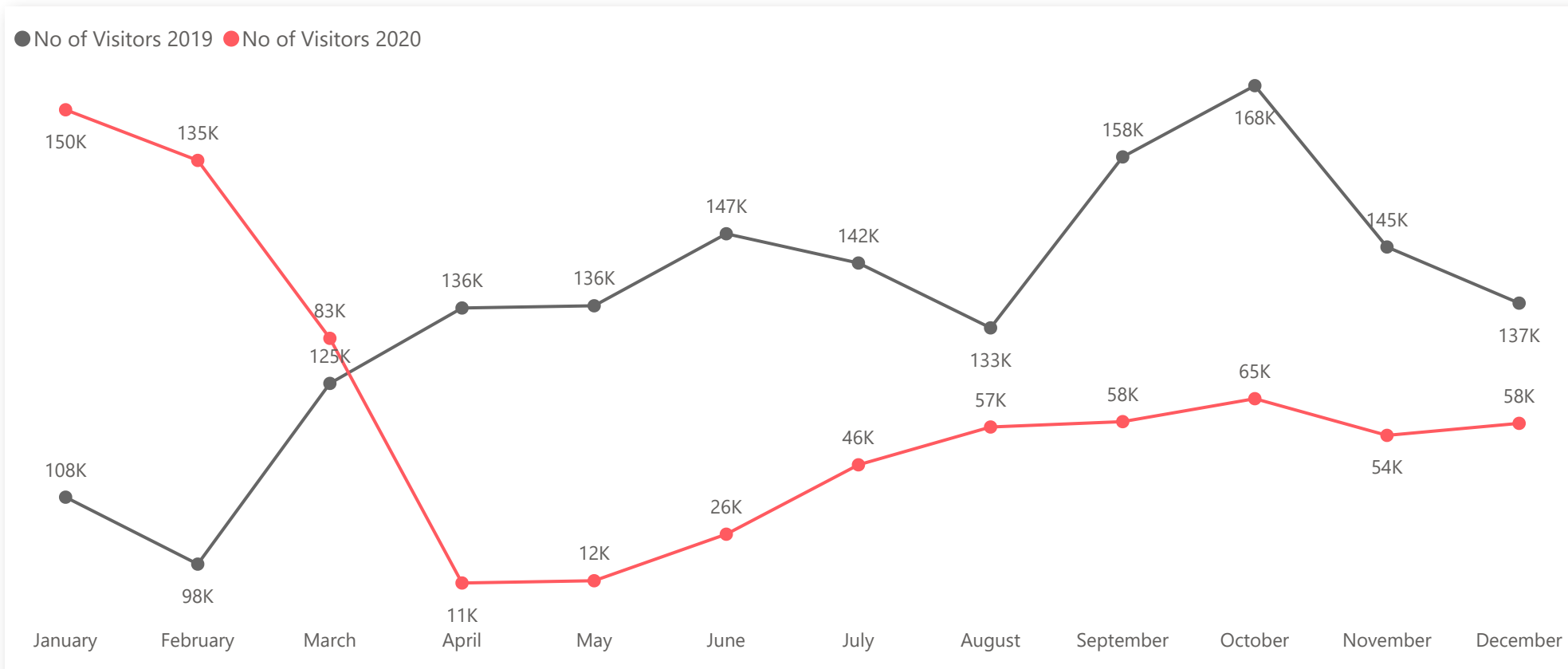
1.63M
Total Visitors in 2019

-878K
-53.76%

0.76M
Total Visitors in 2020

- In 2020, the no of visitors peaked at 150K in January and took a sharp decline starting from March (83K) and witnessed the lowest visitor count at 11K in April
- Visitor count moderately recovered at 65k in the month of October, however overall visitors count remained below 2019 levels
- In contrast, 2019 had a year-peak of 168K visitors in October
- There was a 53.76% (878,000) decline in total visitors, from 2019 to 2020
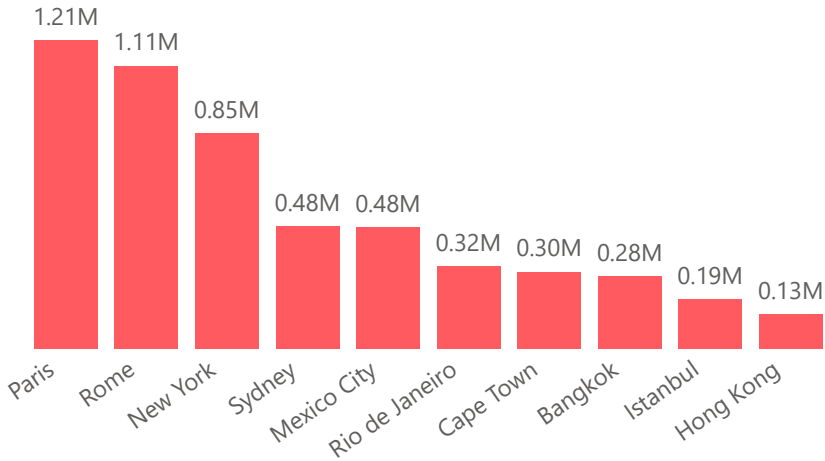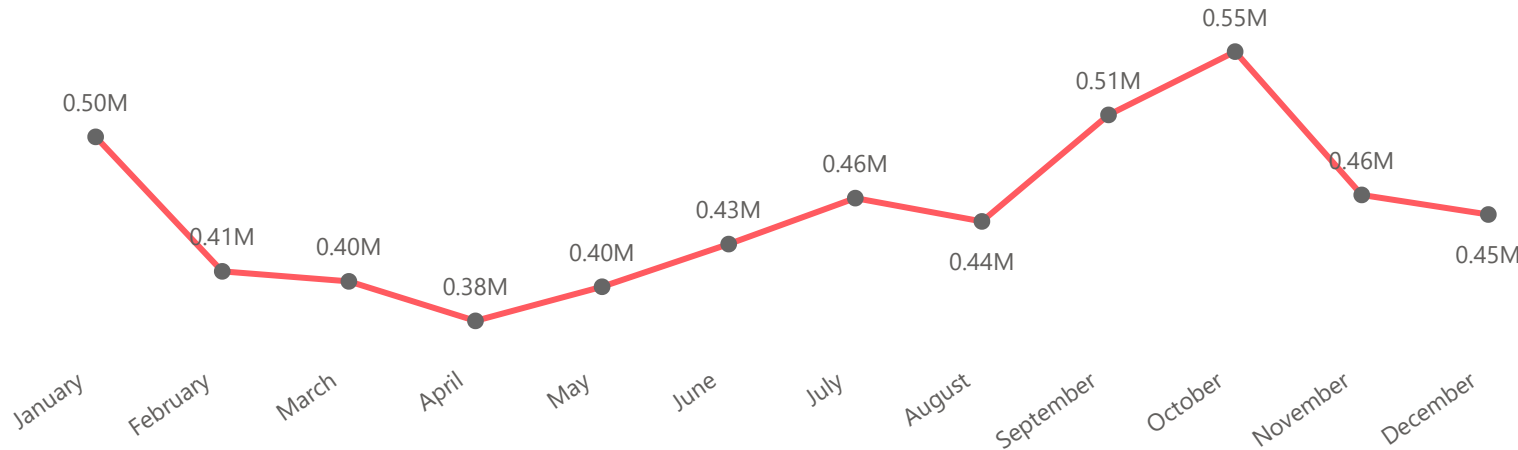
15

Total No of Listings

280K

Visitor Trends Across Cities

City	Value
Paris	1.21M
Rome	1.11M
New York	0.85M
Sydney	0.48M
Mexico City	0.48M
Rio de Janeiro	0.32M
Cape Town	0.30M
Bangkok	0.28M
Istanbul	0.19M
Hong Kong	0.13M

MonthlyVisitor Trend

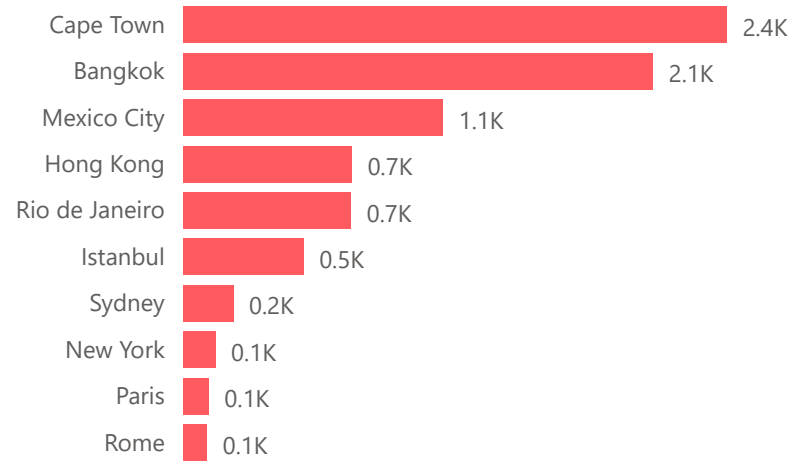| Month	Value
January	0.50M
February	0.41M
March	0.40M
April	0.38M
May	0.40M
June	0.43M
July	0.46M
August	0.44M
September	0.51M
October	0.55M
November	0.46M
December	0.45M

Guest Scores & Ratings

City	Location Score (out of 10)	Cleanliness Score (out of 10)	Value Score (out of 10)	Overall Rating (out of 100)
Mexico City	9.80	9.56	9.55	94.84
Rio de Janeiro	9.76	9.39	9.30	94.57
Cape Town	9.72	9.53	9.48	94.40
New York	9.60	9.27	9.37	93.77
Rome	9.56	9.50	9.38	93.52
Sydney	9.69	9.21	9.32	93.23
Paris	9.69	9.21	9.28	93.06
Bangkok	9.24	9.41	9.34	93.00
Istanbul	9.43	9.05	9.17	91.06
Hong Kong	9.55	8.99	8.99	89.71

Average Listing Price Across Cities

City	Price
Cape Town	2.4K
Bangkok	2.1K
Mexico City	1.1K
Hong Kong	0.7K
Rio de Janeiro	0.7K
Istanbul	0.5K
Sydney	0.2K
New York	0.1K
Paris	0.1K
Rome	0.1K

Key Insights

District Location Scores Assessment for NYC
- The Bronx's lowest location score (9.33) highlights the need for targeted improvements in the district. Prioritizing enhancements can enhance guest experiences and boost the district's reputation

Host Response Time Impact Examination
- The majority of hosts responds within an hour (54.81%), indicating a high level of responsiveness
- Considering that host response time has a direct impact on listing ratings, it becomes critical to improve communication efficiency. Swift responses lead to better guest experiences and higher ratings

Listing Prices Analysis
- There's significant price variation across cities and room types. For instance, cities like Cape Town & Bangkok have higher average prices for Hotel rooms compared to Private rooms, while the opposite is observed in cities like Rio De Janeiro & Istanbul
- This indicates that pricing strategies should be tailored according to the local market dynamics and preference of travellers
- In New York & Paris, hotel rooms have a higher average price compared to other room types, suggesting a segment of travellers willing to pay premium for hotel experiences
- Conversely, in cities like Sydney and Rome, private rooms have a relatively lower average price, indicating potential opportunities to target budget-conscious travellers

Composite Score Analysis
- Staten Island stands out with an impressive average of 19.61, followed closely by Brooklyn (9.77), Bronx (9.71), Queens (9.68), and Manhattan (9.67). These results indicate strong performance in check-in experience and host communication, with Staten Island leading the way in guest satisfaction.

Listing Age & Host Tenure Analysis
- The trend of increased average ratings amongst older listings in most cities suggests several potential insights
- Guests may perceive older listings as more trustworthy and reliable due to their longevity on the platform
- Hosts can be encouraged to commit to long-term hosting by highlighting the correlation between older listings and increased average ratings

Property Type Price Analysis
 • Under Room Type- 'Entire Place', Property Type- 'Entire Villa has the highest average listing price of 9.18K USD
 • This finding assists hosts in pricing strategies and helps guest seeking upscale accommodations

Monthly Visitor Trend (Pre-pandemic vs Pandemic levels)
 • In **2020**, the no of visitors peaked at **150K** in January and took a sharp decline starting from March (**83K**), and witnessed the lowest visitor count at **11K** in April
 • Visitor count moderately recovered at **65K** in the month of October, however overall visitors count remained below 2019 levels.
 • In contrast, **2019** had a year-peak at **168K** visitors in October
 • There was a **53.76**% (**878K**) decline in total visitors count from 2019 to 2020