**Airbnb NYC Analysis - Final Report**

**1. Introduction**

This report presents an exploratory data analysis of Airbnb listings in New York City, focusing on pricing trends, availability, demand, host activity, and potential data anomalies. The goal is to derive insights that can guide hosts, investors, and Airbnb managers in making data-driven decisions.

**2. Key Findings**

**A. Pricing Analysis**

* **Average Price by Borough:**

By analysing the boroughs by price, we get to know that Manhattan has the highest average price and then Brooklyn. Also, Bronx and Staten Island have the lowest average price contributor.

* **Highest & Lowest Priced Neighbourhoods:**

On analysis of neighbourhood/area we show that the most expensive listings are concentrated in Tribeca, SoHo, and Chelsea. And the cheapest areas include Coney Island, Bay Ridge, and the Bronx.

* **Overpriced Listings:**

By IQR method we came to the conclusion that some listings exceed the market threshold, suggesting potential overpricing.

**B. Availability & Demand**

* **Borough with Most & Least Listings:**

By using the value\_counts function on neighbourhood group we analysed that Manhattan andBrooklyn have the highest number of listings and Staten Island has the fewest.

* **Seasonality Trends:**

To check the seasonality trend, we first extracted the month from last review, gave it a name review month then used value counts() function on review month to get availability of rooms per month. Which gave us the insight that demand peaks in the summer months (June–August) and during major holidays and a noticeable decline occurs in winter (January–February).

* **Always Available vs. Never Booked Listings:**

To check this, we simply made to variables name always available mean availability = 365 and never available means availability = 0. It turns out that 5% of listings are available all year (could indicate commercial properties). Also 15% of listings have zero availability, possibly inactive or fake.

**C. Host & Property Insights**

* **Top Hosts by Number of Listings:**

By counting the listing of per host id we get to know that several hosts manage over 100 listings, indicating professional property management firms.

* **Property Type Trends:**

Grouping by room type by pricing it showed that the market is dominated by Entire Homes/Apartments (50%) and Private Rooms (45%).

* **Fake or Duplicate Listings:**

As we seen that there was several host having 100 plus listing which indicates that there can be duplicate or fake listing hence by analysing, we found several cases where listings had identical names or same latitude/longitude, indicating possible duplication.

**D. Review & Rating Analysis**

* **Price vs. Reviews:**

Grouping by price on the basis of number of reviews we get to know that expensive properties do not necessarily receive better reviews. Listings priced around the market median tend to receive the highest review counts.

* **Reviews by Borough:**

For this I grouped by neighbourhood group by number of reviews which gave me that Brooklyn and Manhattan have the most reviewed listings.

* **Highly-Rated Areas:**

The top-rated listings are clustered in Greenwich Village, Williamsburg, and Astoria.

**3. Business Recommendations**

**A. Pricing Strategy**

* We can avoid overpricing beyond the upper market threshold (IQR method) to maintain occupancy.
* Based on seasonal trends we can implement dynamic pricing to attract more customers.

**B. Location-Based Recommendations**

* There bis market growth for new investors in area like Astoria, Williamsburg, and Long Island City, where demand is high.

**C. Improving Listings & Reviews**

* By giving discounts and referral programs we can increase the market. Also by maintain properties and good service can increase the probability of high ratings.
* Avoid duplicate/fake listings, as they may be flagged and removed by Airbnb.

**D. Addressing Seasonality**

* Offer seasonal discounts in winter to maintain occupancy.
* Target high-demand months (June–August) with optimized pricing.

**4. Conclusion**

From above analysis we got to the boroughs and neighbourhood popularity by pricing, by seasonality trend we get to know that in which season there is more availability when we can use dynamic pricing to attract customer, by analysing number of listings by rating we can help new investors where they can start their business. By above analysis hosts and investors can maximize their profitability and customer. Although we can do few improvements to grow the business, like giving discounts, referrals, and maintaining the property etc.

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