Airbnb Power BI Dashboard – Technical Report

1. Purpose and Scope

This project aims to analyze Airbnb listings in the **New York City** area, visualize user preferences, and examine pricing dynamics.

Using **Power BI**, the analysis focuses on:

- **Price distribution**
- **Listing density by neighborhood**
- **Average price and service fee by room type**
- **User reviews and ratings**

The dashboard provides valuable insights into market trends and supports **pricing strategies, revenue optimization, and investment decisions**.

2. Dataset and Schema

- **Source file:** Airbnb_Open_Data.csv
- **Key columns (as in the dataset):**
  id, host id, neighbourhood group, neighbourhood, room type, price, service fee, minimum nights, number of reviews, last review, reviews per month, availability 365 …

3. Dataset Summary

Metric	Description
Total Listings	102K
Total Neighborhoods	225
Total Reviews	10M
Average Reviews	101

4. Dashboard Contents

4.1. Key Performance Indicators (KPIs)

- **Total Reviews:** 10M
- **Average Monthly Reviews:** 101
- **Total Neighborhoods:** 225
- **Total Hosts:**102K

4.2. Neighborhood-Based Analysis

In the New York City Airbnb market, **Manhattan** and **Brooklyn** dominate in both **total price** and **number of reviews**, capturing the largest share of the market.

Queens serves as an important **mid-range alternative** with more affordable options, while **Bronx** and **Staten Island** have lower prices and demand, representing smaller market shares overall.

In general, **high revenue and reservation density are concentrated in Manhattan and Brooklyn**.

4.3. Room Type-Based Price Analysis

According to the data, the **highest revenue** and **service fees** are typically generated by **Entire home/apt** rentals. **Private rooms** also have strong revenue potential. **Shared rooms**, while lower-priced, contribute significantly to overall revenue in certain neighborhoods due to **high occupancy rates**. **Hotel rooms** have the **lowest demand** and represent the smallest portion of the market.

5. Conclusion

The analysis reveals that **demand and revenue** in the New York City Airbnb market are largely concentrated in **Manhattan** and **Brooklyn**.

Queens plays a significant role as a **mid-tier alternative**, whereas **Bronx** and **Staten Island** remain smaller players due to lower prices and demand.

In terms of room types, **Entire home/apt** generates the highest revenue, while **Shared rooms** stand out thanks to their **high occupancy rates**.

These findings provide **valuable insights** for developing **pricing strategies**, making **investment decisions**, and planning **marketing campaigns** within the Airbnb market.

6. Recommendations for Improvement

1. **Data Updates**
   Integrate the **Airbnb API** or regularly updated datasets to make the dashboard **dynamic** and ensure real-time insights.
2. **Price Prediction Module**
   Develop **dynamic pricing models** using features like location, room type, and seasonal demand.
3. **Demand Forecasting**
   Use review counts, pricing, location, and occupancy data to predict **future reservations**.
4. **Mobile-Friendly Dashboard**
   Optimize the dashboard for **Power BI Service mobile layouts** to improve accessibility for stakeholders.
5. **Data Cleaning**
   Correct **neighbourhood group** inconsistencies (e.g., “brookln” → **Brooklyn**) for more **accurate visualizations**.