Airbnb Data Analysis Project Report

Objective:

The goal of this project is to analyze Airbnb listings to understand price patterns, influential features, and potential recommendations for hosts or customers.

Data Overview:

- The dataset includes listings from Airbnb, containing variables such as:

name, host_name, neighbourhood, room_type, price, minimum_nights, number_of_reviews, last_review, etc.

Data Cleaning:

- Null values were handled:

- Columns like reviews_per_month with missing values were filled with 0.

- Date columns were parsed and treated appropriately.

- Duplicates were removed to ensure clean analysis.

- Type conversion was applied where needed (e.g., converting last_review to datetime).

Analysis Summary:

1. Price Distribution

- Heavily right-skewed.

- Majority of listings are under a certain threshold (e.g., $500).

2. Room Type Impact

- Private rooms and entire homes are the most popular.

- Entire homes tend to be more expensive on average.

3. Neighborhood Distribution

- Certain neighborhoods dominate listings and vary greatly in average price.

4. Minimum Nights Analysis

- Most listings have a minimum night requirement of less than 10.

5. Reviews Analysis

- Listings with higher reviews often correlate with affordability and popular areas.

Insights:

- Prices are heavily influenced by location and room type.

- Listings with more reviews generally have lower prices and higher accessibility.

- Some listings have outlier prices and may skew averages.

Power BI Visualization Suggestions

Interactive Price Adjusting Slider

Use Case: Allow users to filter listings dynamically based on their budget range.

Components:

1. Slider (Slicer for Price):

- Range from $0 to maximum observed price.

- This filters all visualizations based on selected price range.

2. Map Visualization:

- Show geolocation of listings.

- Bubble size based on number of reviews.

- Color code based on room_type.

3. Bar Chart:

- Average price by neighborhood.

- Adjust dynamically with the slider.

4. Pie Chart:

- Proportion of listings by room_type.

5. Card Visuals:

- Total listings

- Average price

- Average reviews

- These update with slider filter.

Benefits of Power BI Integration:

- Interactivity: Real-time filtering with slider.

- Visual Appeal: Clean, dynamic dashboards for stakeholders.

- Data Exploration: Enables non-technical users to explore pricing patterns easily.

Next Steps:

- Export cleaned dataset from Jupyter to .csv.

- Import into Power BI.

- Build the above dashboard with interactive elements.