**Technical Report: Airbnb Price Trends Dashboard Analysis**

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**2. Introduction**

**Objective of the Project:**  
To analyse Airbnb pricing dynamics based on room types, guest capacity, and maximum rental listings. The dashboard aims to guide users, hosts, and market analysts in understanding rent variations and identify what factors influence price changes.

**Problem Being Addressed:**  
In a saturated short-term rental market, it’s difficult for property owners and potential guests to understand fair pricing trends. This analysis helps clarify how room type, capacity, and service level affect Airbnb rental prices.

**Key Datasets and Methodologies:**  
This report uses Airbnb listing data, visualized through Power BI. Key measures include maximum and average rent, guest accommodation capacity, and pricing by room category. All insights are derived using statistical aggregations and DAX measures.

**3. Story of Data**

**Data Source:**  
Public Airbnb listings data (assumed from Kaggle or Airbnb's open-source datasets).

**Data Collection Process:**  
The dataset includes attributes for price, maximum rent, number of guests allowed, and room types. Each entry corresponds to a unique listing with associated pricing information.

**Data Structure:**

* Rows - Individual property listings
* Columns - Price, guest capacity, room type, maximum rent, and other features

**Important Features and Their Significance:**

* **Max Rent** – Indicates price ceiling for each listing
* **Room Type** – Reflects the service model (e.g., shared, private, treehouse)
* **Guest Capacity** – Determines affordability per head
* **Average Price per Room Type** – Highlights pricing trends across categories

**Data Limitations or Biases:**  
Some room types (e.g., treehouses or tents) have fewer entries, which may affect trend reliability. Currency and price formats vary by region.

**4. Data Splitting and Preprocessing**

**Data Cleaning:**  
Blank price entries and ambiguous room types were filtered. Duplicates were removed, and only listings with numerical price values were kept.

**Handling Missing Values:**  
Negligible missing values, cleaned via Power BI filters and DAX validation.

**Data Transformations:**

* Calculated fields for:
  + **Average Price per Guest Count**
  + **Average Price per Room Type**
  + **Max Rent Indicator**
* Conversion of large currency values into readable formats (e.g., ₹36.08K)

**Data Splitting:**

* **Independent Variables:** Guest count, room type
* **Dependent Variables:** Max rent, average rent

**Industry Context:**  
Short-term rental, travel & hospitality, property market

**Stakeholders:**  
Airbnb hosts, real estate analysts, hospitality managers, tourists

**Value to Industry:**  
Helps pricing optimization, customer targeting, and portfolio planning

**5. Pre-Analysis**

**Key Trends:**

* Maximum rent across listings peaks at ₹36.08K
* Room types like **shared rooms in rental units** have the highest average prices
* Listings for 1 guest show disproportionately high prices compared to larger guest counts

**Potential Correlations:**

* Guest count vs. price shows an inverse trend fewer guests don’t always mean cheaper rates
* Niche accommodations (e.g., treehouses and tents) trend toward lower pricing

**Initial Insights:**  
The top 3 most expensive room categories are driven more by exclusivity than space or guest capacity.

**6. In-Analysis**

**Unconfirmed Insights:**

* Some shared rooms surpass private accommodations in price likely due to location or amenities
* Listings with higher guest counts don't always follow linear price increases

**Recommendations:**

* Focus marketing efforts on shared rental units and guest suites top earners
* Improve listings for mid-range guest capacity (4–8 guests) currently underpriced
* Offer tiered pricing by room type to help attract specific customer segments

**Analysis Techniques Used in Power BI:**

* KPI Cards for max rent and average values
* Line charts for price-by-guest trends
* Bar charts for room-type pricing
* Dropdown slicer for filtering by room type

**7. Post-Analysis and Insights**

**Key Findings:**

* ₹36.08K is the recurring highest rent across the board
* Guest capacity of 1 has the highest price at ₹14.7K, followed by a drop at 2–4 guests
* Treehouses and serviced apartments show the lowest pricing across room types
* Shared rooms in rental units average ₹8.7K, the highest among room types

**Comparison with Initial Findings:**  
The trend of non-linear guest pricing was confirmed. However, higher pricing for shared spaces was a surprising but consistent insight.

**8. Data Visualizations & Charts**

* **KPI Cards:** Max Rent
* **Line Chart:** Average Price by Number of Guests
* **Bar Chart:** Average Price by Room Type
* **Slicer Dropdown:** Filter room types interactively
* **Imagery:** Luxury Airbnb listing added as visual emphasis

Each visual contributes to decoding the story behind rent fluctuations and user preferences.

**9. Recommendations and Observations**

**Actionable Insights:**

* Introduce promotional offers for mid-capacity stays (4–6 guests)
* Diversify listings to include niche experiences (e.g., treehouses) for budget-conscious travellers
* Use guest count pricing trend to develop bundle offers (e.g., stay 3 pay for 2)

**Optimizations or Business Decisions:**

* Hosts should reassess pricing for 1–2 guest listings high-value opportunity
* Airbnb could promote high-performing room types with curated recommendations

**Unexpected Outcomes:**

* Shared accommodations outperform private ones in pricing, contradicting conventional assumptions
* Serviced apartments remain underpriced despite offering structure and comfort

**10. Conclusion**

**Key Learnings:**  
Room type and guest count greatly influence price but not always in the ways one might expect. Shared spaces can be high-value, and lower guest capacity can fetch premium pricing.

**Limitations:**  
Data is location-agnostic and lacks detailed geographic segmentation. Seasonal trends not accounted for.

**Future Research:**

* Integrate geo-pricing models (e.g., city-to-city rent trends)
* Add time-based variables for seasonal comparisons
* Compare performance metrics for Super hosts vs. regular hosts

**11. References & Appendices**

**References:**  
• Airbnb Public Dataset (e.g., Inside Airbnb or Kaggle listings)  
• Power BI dashboard model and DAX transformations

**Appendices:**  
• Visuals used in report  
• Price breakdown table  
• Power BI measures list