**Airbnb Listings Optimization Report**

Prepared by: Nikhil Kumar Nigam

Date: 17 May 2025

**1. Introduction**

Airbnb has observed a correlation between the number of property images and booking rates. This analysis aims to:

* Determine the minimum mandatory images to ensure bookings.
* Identify the optimal image count to maximize bookings.

Datasets analyzed include:

1. Listings Data: 500 listings with images and bookings.
2. Open Listings: Daily unfilled listings (Aug 2018–Aug 2019).
3. Redundant Listings: Inactive listings (no bookings in 1 year).

**2. Abstract**

Key findings:

* Listings with 6–15 images attract the most bookings.
* 11–15 images are optimal for maximizing bookings.
* Minimum 6 images are required to ensure at least 1 booking/month.
* Superhosts benefit from higher image counts (11+), while regular hosts perform best with 11–15 images.

**3. Tools Used**

1. Data Analysis: Python (Pandas, NumPy), Excel.
2. Visualization: Tableau (Box plots, bar charts).

**4. Steps Involved**

**Step 1: Data Preparation**

* Cleaned and merged datasets.
* Created bins for image counts (e.g., 0–2, 3–5, 6–10, etc.).

**Step 2: Exploratory Analysis**

* **Open Listings:** 
  + Calculated percentages of unfilled listings by image bin.
  + Found 6–15 images had the lowest open listings (highest bookings).

**Step 3: Redundant Listings Analysis**

* 11–15 images had the lowest redundancy (5% inactive).
* 0–5 images had the highest redundancy (30% inactive).

**Step 4: Bookings Distribution**

* Box Plots:
* Regular hosts: 12–13 images had the highest median bookings.
* Superhosts: 11–23 images performed best.
* Binned Analysis:
  + 11–15 images consistently attracted the most bookings across host types.

**Step 5: Property Age & Monthly Bookings**

* + Listings with 6+ images ensured ≥1 booking/month.
  + Older listings (3–5 years) with 11–15 images had the highest bookings.

**5. Conclusion & Recommendations**

* + - * Optimal Images: 11–15 (balances host effort and booking rates).
      * Minimum Mandatory: 6 images (ensures baseline bookings).
      * Host-Specific Guidance:
      * Regular Hosts: 11–15 images.
      * Superhosts: 11–23 images (flexible).

**Recommendations**: Implementing these thresholds can reduce redundant listings by 25% and increase overall bookings by 15–20%.