

Airbnb Pricing Model Analysis Report

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Summary of EDA Results

1. Price Distribution:

- The distribution of log_price approximates a normal distribution with slight skewness.

2. Market Share of Cancellation Policies:

- Strict: 43.8% of listings.
- Flexible: 30.4% of listings.
- Moderate: 25.7% of listings.

3. Price Variation by Bedrooms:

- Median log_price increases with the number of bedrooms.
- Properties with more bedrooms exhibit greater price variability.

4. Price Variation by Accommodates:

- Median log_price increases with the number of accommodates.
- Wider price range for properties accommodating 4-6 guests.

5. Correlation Analysis:

- Strong correlations with log_price: accommodates (0.57), bedrooms (0.47).
- Moderate correlation: bathrooms (0.36).
- Weak correlations: cleaning_fee (0.11), review_scores_rating (0.08).

Linear Regression Results

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1. Model Performance:

- Mean Absolute Error (MAE): 0.446
- Root Mean Squared Error (RMSE): 0.582
- R² Score: 0.341 (34.1% variance explained).

2. Feature Coefficients:

- Positive Impact: accommodates (0.178), bedrooms (0.122), bathrooms (0.076).
- Minor Impact: cleaning_fee (0.019), review_scores_rating (0.009).
- Negative Impact: beds (-0.069).

Observations on Model Performance

- The model explains 34.1% of the variance in prices, suggesting missing influential factors.
- Multicollinearity (e.g., between beds, bedrooms, and accommodates) could skew interpretations.
- Including features like room_type, cancellation_policy, and geographic factors could improve results.

Insights and Recommendations

For Hosts:

- Increase Accommodations: Optimize layouts or add sleeping arrangements.
- Maximize Bedroom Count: Listings with more bedrooms command higher prices.
- Focus on Amenities: Adding bathrooms or improving facilities could attract premium bookings.

For Travelers:

- Flexible Cancellation Policies: Travelers valuing flexibility should focus on moderate or flexible listings.

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For Airbnb Business:

- Feature Enrichment: Collect more granular data (e.g., property location, seasonal trends).
- Target Marketing for Hosts: Promote properties with optimal bedroom and bathroom configurations.
- Optimize Commission Strategies: Consider commission tiers based on property features.