



Data Science

The background of the slide features a photograph of a wooden desk. On the desk, there is a laptop, a tablet, and several sheets of paper displaying various data visualizations, including pie charts, bar charts, and line graphs. A hand is visible pointing at one of the charts with a pen. The image is partially overlaid by a dark blue geometric shape on the left and a yellow geometric shape on the bottom right.

REPORT

DATA ANALYSIS FOR AIRBNB DATA SET

Key Objectives



- ☐ To identify the market trends
- ☐ To extract the hidden patterns
- ☐ To take insights from the data to support data-driven decision-making
- ☐ To measure the relationship between continuous variables
- ☐ To formulate policy suggestions based on insights

Introduction



The dataset encompasses 29,149 Airbnb listings, detailing attributes like listing ID, hostname, price, neighborhood, room type, and the number of reviews. It offers insights into the pricing and popularity of diverse listings across various neighborhoods. This rich data source is ideal for analyzing trends and understanding factors influencing Airbnb rental preferences and pricing.

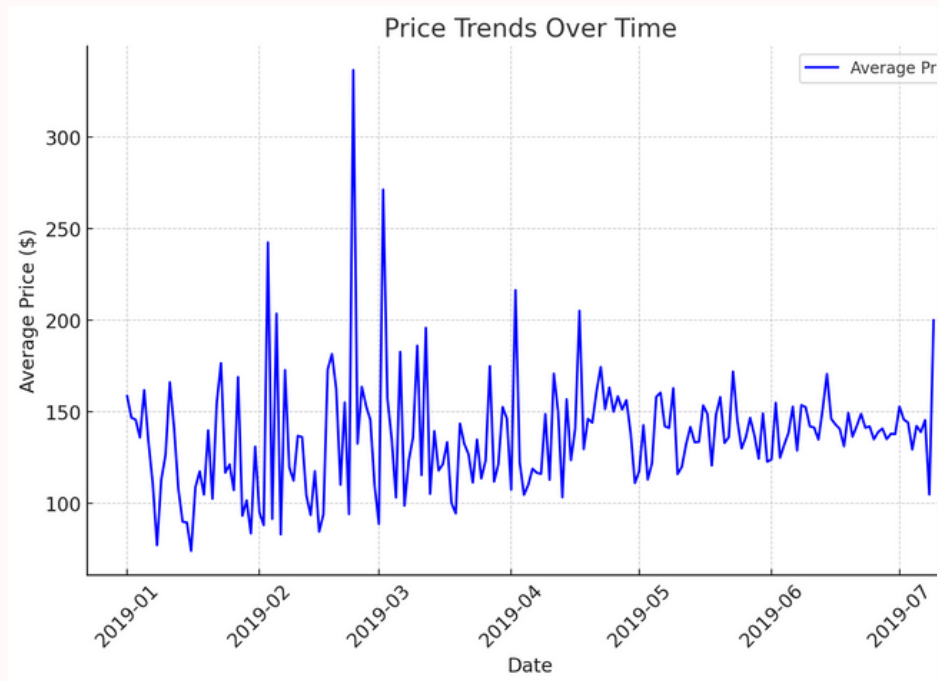
This dataset helps us to analyze many trends related to the room types and their popularity. It can help us further understand and evaluate the popularity of the rooms in different localities according to the reviews.

Each column in the data set provides us with valuable insight into the data. It is evaluated in the list below:

- `listing_id`: A unique identifier for each Airbnb listing.
- `host_name`: The name of the host for the listing.
- `last_review`: The date of the last review received.
- `price`: The price of the listing in a string format (e.g., "\$225").
- `nbhood_full`: The neighborhood and its broader location (e.g., "Manhattan, Midtown").
- `room_type`: The type of room offered (e.g., "Entire home/apt", "Private room").
- `number_of_reviews`: The total number of reviews received by the listing.

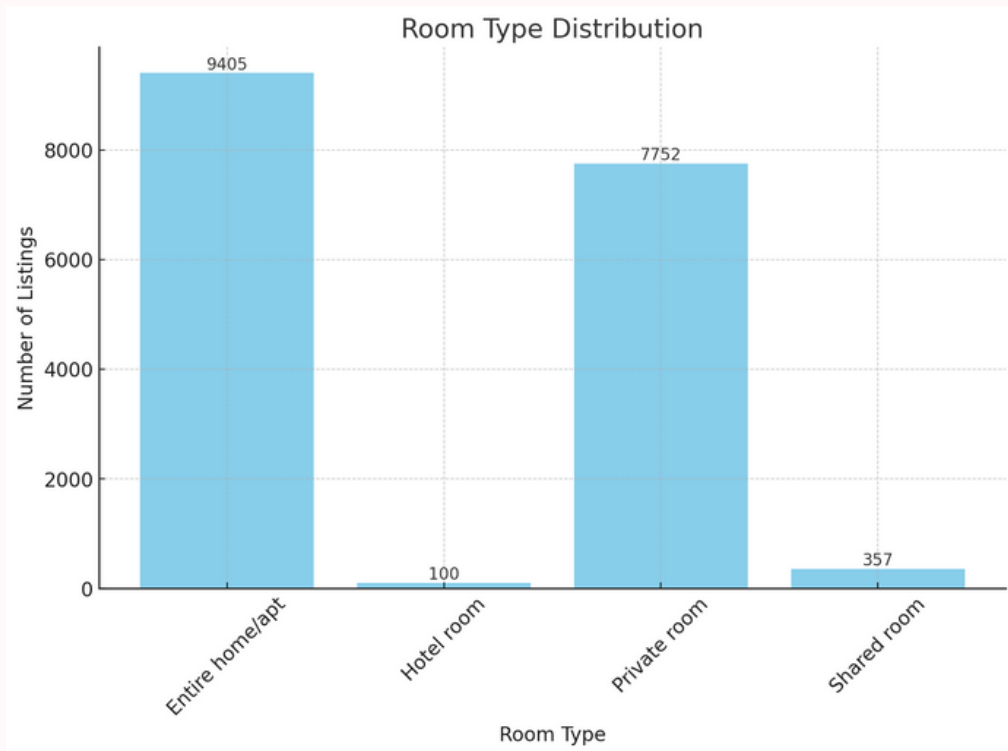
Graphs/Charts

1- Price Trends Over Time (Line Graph)



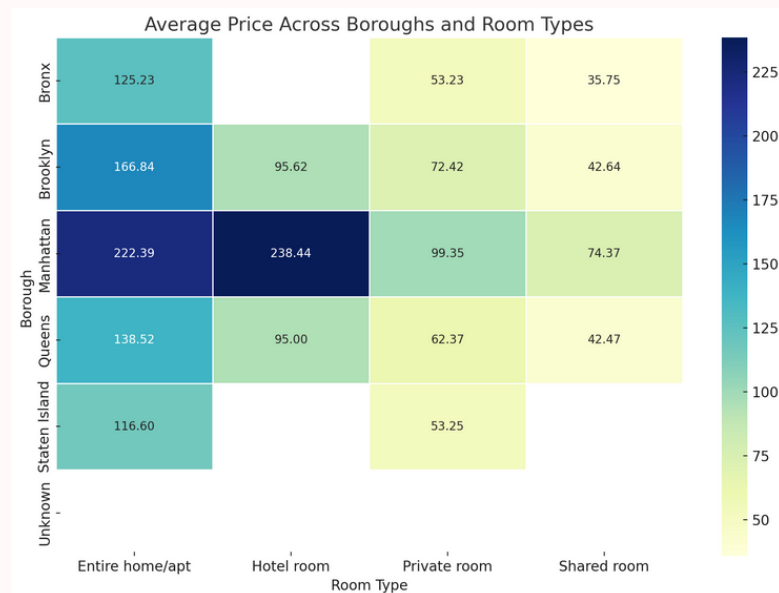
This graph shows Airbnb pricing trends, peaking in March and dipping in mid-January. Prices fluctuate seasonally, with highs in peak tourist seasons and lows in off-peak times. Special events and holidays also cause spikes. Long-term trends and market saturation affect pricing, reflecting changes in neighborhood popularity and competition among listings. Hosts adjust prices based on seasonality, events, and market dynamics.

2- Room Type Distribution (Bar Chart)



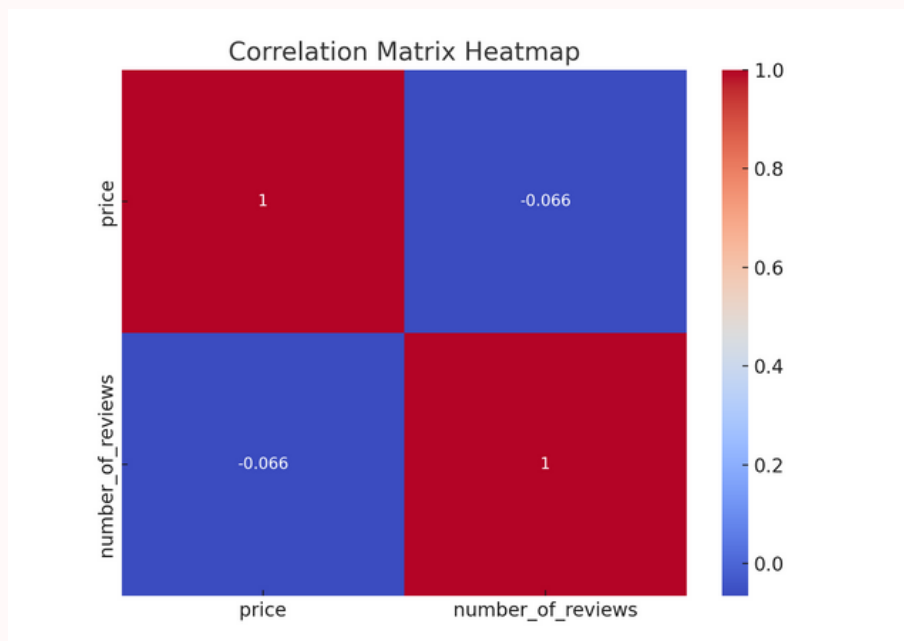
The bar chart from the Airbnb dataset reveals that entire homes or apartments are the most popular listing type, offering privacy and full amenities, ideal for families, groups, or longer stays. Private rooms, where guests have a private space but share common areas, are the next most common, catering to solo travelers or those seeking affordability. Shared rooms are the least common, appealing to budget travelers and those desiring a communal experience. The prevalence of these types reflects market demand, location, and cultural preferences of travelers.

3- Room Type vs. Neighborhood Average Prices (Heatmap)



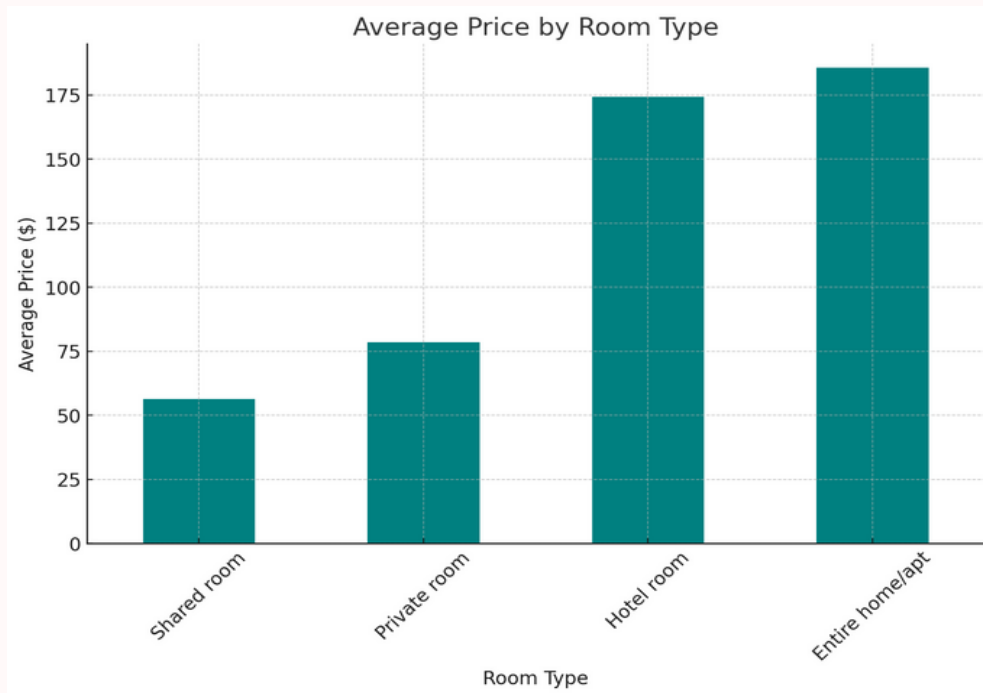
This heat map shows the average prices of Airbnb listings across different boroughs and room types. It provides insights into how pricing varies with location and room type.

4- Correlation Matrix Heatmap and Description



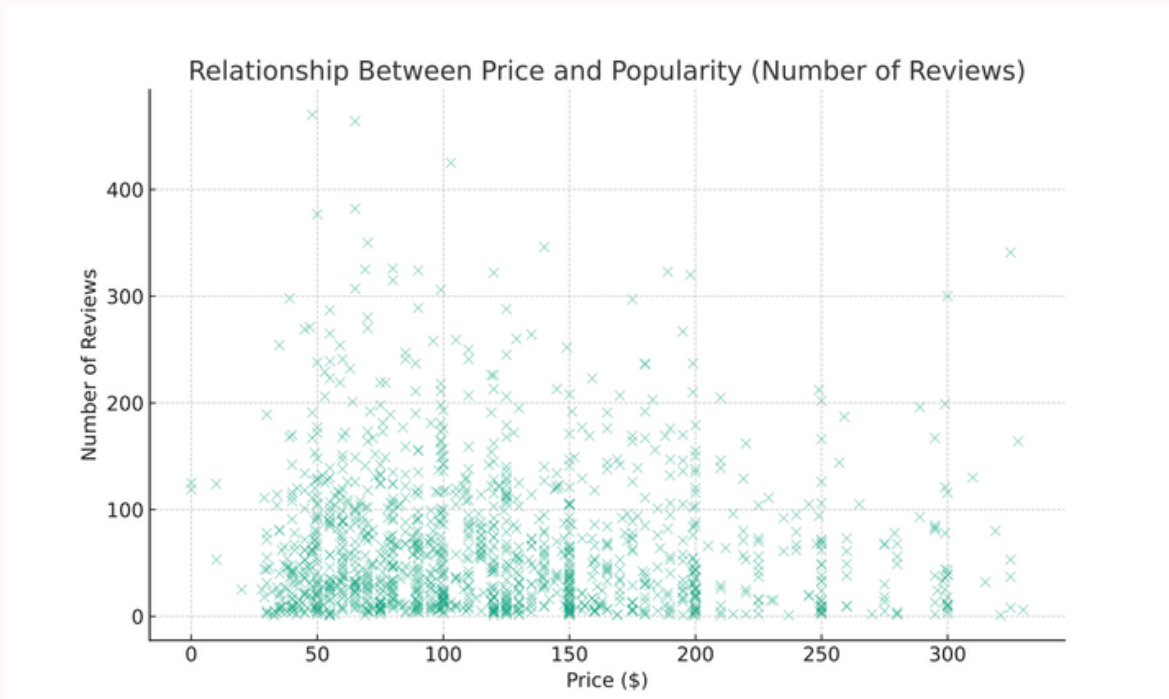
The Correlation Matrix Heatmap shows a weak negative correlation (-0.066) between Airbnb listing prices and the number of reviews, indicating the price has little impact on a listing's popularity or review frequency.

5- Average Price by Room Type and Neighbourhood



The bar graph shows Airbnb pricing trends by room type and neighborhood. Entire homes/apartments cost more due to amenities and privacy, private rooms are mid-priced, and shared rooms are budget-friendly. Prices also vary by neighborhood, with central areas and unique attractions commanding higher prices, reflecting the influence of location, amenities, and cultural appeal.

6- Price and Popularity:



A scatter plot reveals that lower-priced Airbnb listings usually get more reviews, suggesting affordability leads to higher occupancy and review frequency. High-priced listings often have fewer reviews, targeting a niche market. Outliers indicate unique listing attributes. This highlights the importance of pricing strategies in balancing affordability and value for success on Airbnb.

How to improve Airbnb Listings:

- **Dynamic and Competitive Pricing:** Adjust rates based on demand, seasonality, and local events; offer discounts for longer stays.
- **Quality Amenities and Guest Comfort:** Provide fast Wi-Fi, a well-equipped kitchen, quality toiletries, and personal touches like welcome notes or local guides.
- **Effective Communication and Feedback Management:** Be responsive and helpful, encourage reviews, and constructively respond to feedback.
- **Professional Presentation:** Use high-quality photos and provide accurate, detailed descriptions with regular updates.
- **Highlight Local Attractions:** In culturally rich or tourist areas, emphasize local experiences and attractions.
- **Eco-friendly Practices and Cleanliness:** Adopt environmentally friendly practices and maintain high cleanliness, especially post-COVID.
- **Incorporate Smart Features and Accessibility:** Use smart home technology and ensure accessibility for guests with disabilities.
- **Stay Informed and Insured:** Keep up with local regulations and maintain proper insurance for security and protection.

Recommendations:

Several salient observations and ideal pricing schemes for various room categories and locations are provided, derived from the examination of the Airbnb dataset.

- **Seasonal Variations in Pricing:** Adjust prices according to demand in peak and off-peak seasons, and during special events and holidays.
- **Room Type Pricing:** Price entire homes/apartments highest, private rooms mid-range, and shared rooms lowest, considering their popularity and target demographic.
- **Location-Based Pricing:** Charge more in central, tourist-heavy areas; offer lower prices in less central neighborhoods.
- **Price and Popularity Correlation:** More affordable listings typically get more reviews due to higher occupancy; higher-priced listings target a niche market but may have fewer reviews.
- **Improving Listings:** Implement dynamic pricing, focus on guest comfort and amenities, and enhance listing presentation and marketing.

Conclusion:

1. The report provides a detailed analysis of market trends, pricing strategies, and guest preferences within the Airbnb ecosystem, utilizing the platform's extensive dataset to identify patterns and offer actionable insights. It emphasizes the importance for hosts to adapt their pricing strategies in response to seasonal changes and local events, and to enhance guest experiences by leveraging unique local attractions. The report concludes with practical recommendations for Airbnb hosts, including using high-quality photos, responsive guest communication, effective review management, setting competitive prices, and adopting eco-friendly practices to increase the appeal and success of their listings.