Airbnb Dynamic Price Recommendation Project

Abstract

This project aims to analyze Airbnb listings in New York City and develop a dynamic pricing recommendation system. Using Python for data preprocessing, Excel for dataset management, and Tableau for visualization, the project provides insights into neighborhood-level pricing, seasonal demand, and host performance. The final dashboard helps hosts optimize their pricing strategies based on data-driven insights.

Introduction

The rapid growth of short-term rental platforms like Airbnb has created a need for optimized pricing strategies. Hosts often struggle to set competitive prices that maximize occupancy while ensuring profitability. This project leverages data analysis and visualization to build a system that recommends dynamic pricing based on location, room type, reviews, and seasonal demand.

Tools Used

- Python (Pandas, NumPy, Matplotlib, Seaborn) for cleaning and analysis
- Excel for dataset structuring and aggregations
- Tableau for interactive dashboard visualizations

Steps Involved in Building the Project

1. Data Collection: Obtained Airbnb dataset containing listing, pricing, and reviews data.
2. Data Cleaning (Python): Handled missing values, removed outliers, normalized data.
3. Data Transformation (Excel): Created summary tables for room type, neighborhood, and demand.
4. Data Visualization (Tableau): Built dashboard showcasing pricing trends, seasonal patterns, and host performance.
5. Insights & Recommendations: Identified key drivers of price and suggested dynamic strategies.

Conclusion

The project successfully demonstrates how Airbnb hosts can leverage data to improve pricing decisions. Manhattan and Brooklyn dominate the market, with prices varying significantly across neighborhoods and room types. Seasonal trends indicate peak demand during summer months, suggesting opportunities for revenue maximization. Future improvements could involve machine learning models for predictive pricing and real-time integration with Airbnb APIs.