

# Airbnb Case Study- Index

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# Objective and Background

## Objective

- ▶ Objective: Providing Insights for the Head of Acquisitions and Operations, NYC, and the Head of User Experience, NYC
- The objective of this presentation is to provide valuable insights and analysis to support the decision-making process for the Head of Acquisitions and Operations, NYC, and the Head of User Experience, NYC at Airbnb.
- By leveraging the available data, we aim to offer actionable recommendations and strategic guidance to optimize property acquisition, operations, and user experience in New York City.
- Our analysis will cover various aspects, including room types, customer booking patterns, neighbourhood dynamics, price preferences, and popular locations.
- The insights presented in this presentation will empower the respective heads to make informed decisions, enhance property acquisition strategies, optimize property listings, and improve the overall user experience on the Airbnb platform.

## Background

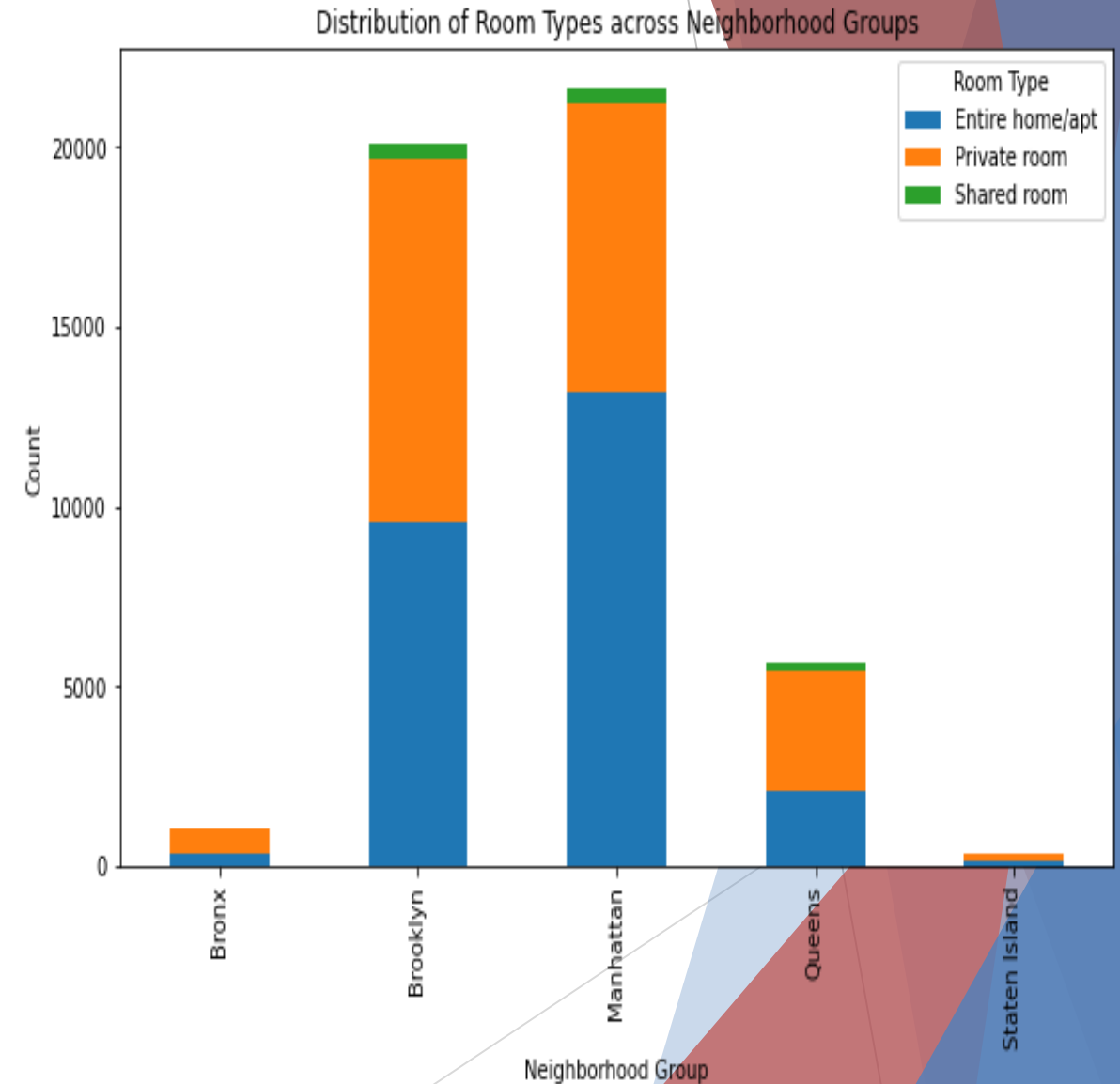
- ▶ New York City Airbnb: Current State and Importance of Data Analysis
- Airbnb has been a prominent player in the accommodation industry in New York City, offering a diverse range of lodging options to travelers.
- However, the past few months have witnessed significant changes in the travel landscape, with the lifting of restrictions and a resurgence in travel demand.
- As Airbnb aims to capitalize on this upward trend, data analysis becomes crucial for understanding market dynamics, identifying trends, and making informed decisions.
- Data analysis provides valuable insights into customer preferences, property performance, pricing patterns, and neighborhood dynamics, enabling Airbnb to adapt its strategies and operations accordingly.
- With a vast amount of data at our disposal, leveraging data analysis allows us to uncover hidden patterns, optimize property acquisition, enhance user experience, and ultimately drive revenue growth.
- In this presentation, we will delve into the data to uncover key insights that will aid the Head of Acquisitions and Operations, NYC, and the Head of User Experience, NYC in making strategic decisions for the success of Airbnb in New York City.

# Data Preparation

- ▶ Data Preparation: Cleaning, Handling Missing Values, and Transformation
  - Data cleaning: The Airbnb dataset for New York City underwent a rigorous data cleaning process to ensure data accuracy and reliability. This involved removing duplicates, correcting errors, and addressing inconsistencies in the dataset.
  - Handling missing values: Missing data can impact the analysis, so careful attention was given to handling missing values. Missing values were identified and appropriate strategies were applied, such as imputation techniques or removing missing data points, to ensure data completeness.
  - Data transformation: The dataset was transformed to make it suitable for analysis. This involved converting variables into the correct data types, creating new variables from existing ones, and performing feature engineering to derive meaningful insights. Additionally, data normalization techniques were applied to standardize variables for better comparability.
  - Data formatting: The dataset was formatted to ensure consistency and compatibility for analysis. This included renaming variables, reordering columns, and ensuring uniformity in data formats.
  - Data validation: Prior to analysis, the dataset was thoroughly validated to ensure data integrity and reliability. Data validation involved cross-checking against external sources, verifying data coherence, and performing quality checks to identify any potential issues.
- ▶ By performing these data preparation steps, the dataset was transformed into a clean, complete, and usable format, ready for in-depth analysis to gain valuable insights for decision-making.

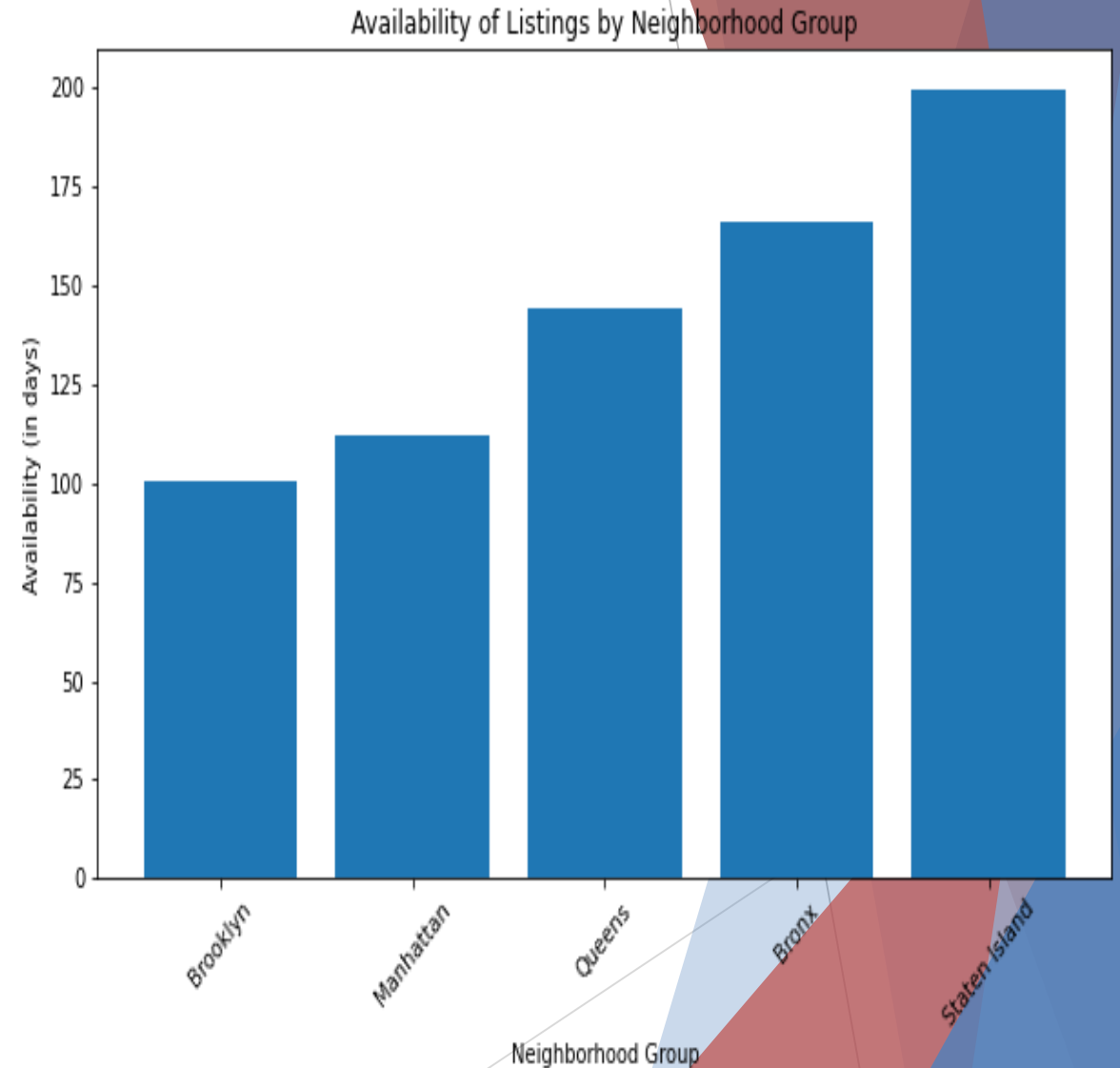
# Room Type with respect to Neighbourhood Group

- ▶ Summary: The bar chart showcases the distribution of room types across different neighborhood groups in New York City. From the analysis, we can observe the following:
  1. Manhattan has the highest number of entire homes/apartments, followed by Brooklyn and Queens. Staten Island and the Bronx have a relatively smaller number of entire homes/apartments.
  2. Shared rooms are least common in all neighborhood groups, indicating that most Airbnb listings offer private rooms or entire homes/apartments.
  3. Brooklyn and Queens have a higher proportion of private rooms compared to other neighborhood groups.
- ▶ Conclusion: Based on the analysis of room types across neighborhood groups, the following insights can be drawn:
  1. Manhattan is the most popular neighborhood group for entire homes/apartments, suggesting a high demand for spacious accommodations.
  2. Brooklyn and Queens have a mix of entire homes/apartments and private rooms, indicating diverse options for travelers with varying preferences.
  3. The availability of shared rooms is relatively limited across all neighborhood groups, implying a lower demand for shared accommodations.
- ▶ These findings can inform the decision-making process for the Head of Acquisitions and Operations, NYC, and the Head of User Experience, NYC, by helping them understand the distribution of room types in different neighborhood groups and make strategic decisions regarding property acquisitions, listing optimization, and customer targeting to maximize revenue and improve user experience.



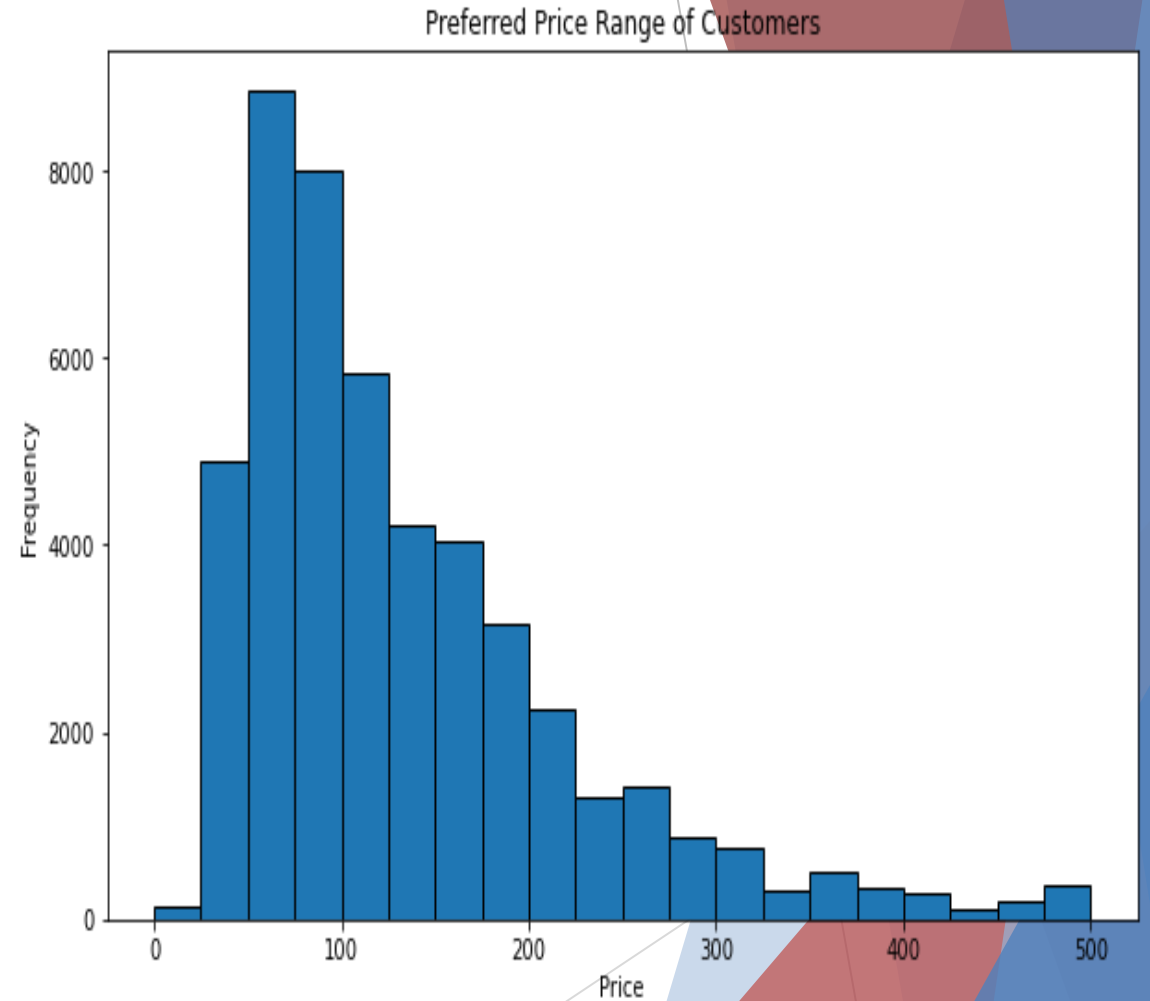
# Neighbourhood vs Availability

- ▶ Summary: The bar chart represents the average availability of listings in different neighborhood groups in New York City. From the analysis, we can observe the following:
  1. Staten Island has the highest availability, indicating a relatively higher number of listings with more open dates for booking.
  2. Manhattan and Brooklyn have lower availability compared to other neighborhood groups, suggesting a higher demand for accommodations in these areas.
  3. The Bronx and Queens have moderate availability, indicating a balanced supply and demand of listings.
- ▶ Conclusion: Based on the analysis of neighbourhood versus availability, the following insights can be derived:
  1. Staten Island presents an opportunity for the Head of Acquisitions and Operations, NYC, to explore property acquisitions and increase the inventory in this neighborhood group, as there is a higher availability of listings.
  2. Manhattan and Brooklyn, being popular tourist destinations, may require strategic planning by the Head of User Experience, NYC, to optimize the listing order and improve the user experience, considering the relatively lower availability.
  3. The Bronx and Queens have a moderate availability, indicating a balanced market. The user experience can be further enhanced by focusing on the unique features and attractions of these neighborhoods.
- ▶ These findings can assist the decision-making process for property acquisitions, inventory management, and user experience optimization, enabling Airbnb to maximize revenue and provide a satisfactory experience to its users.



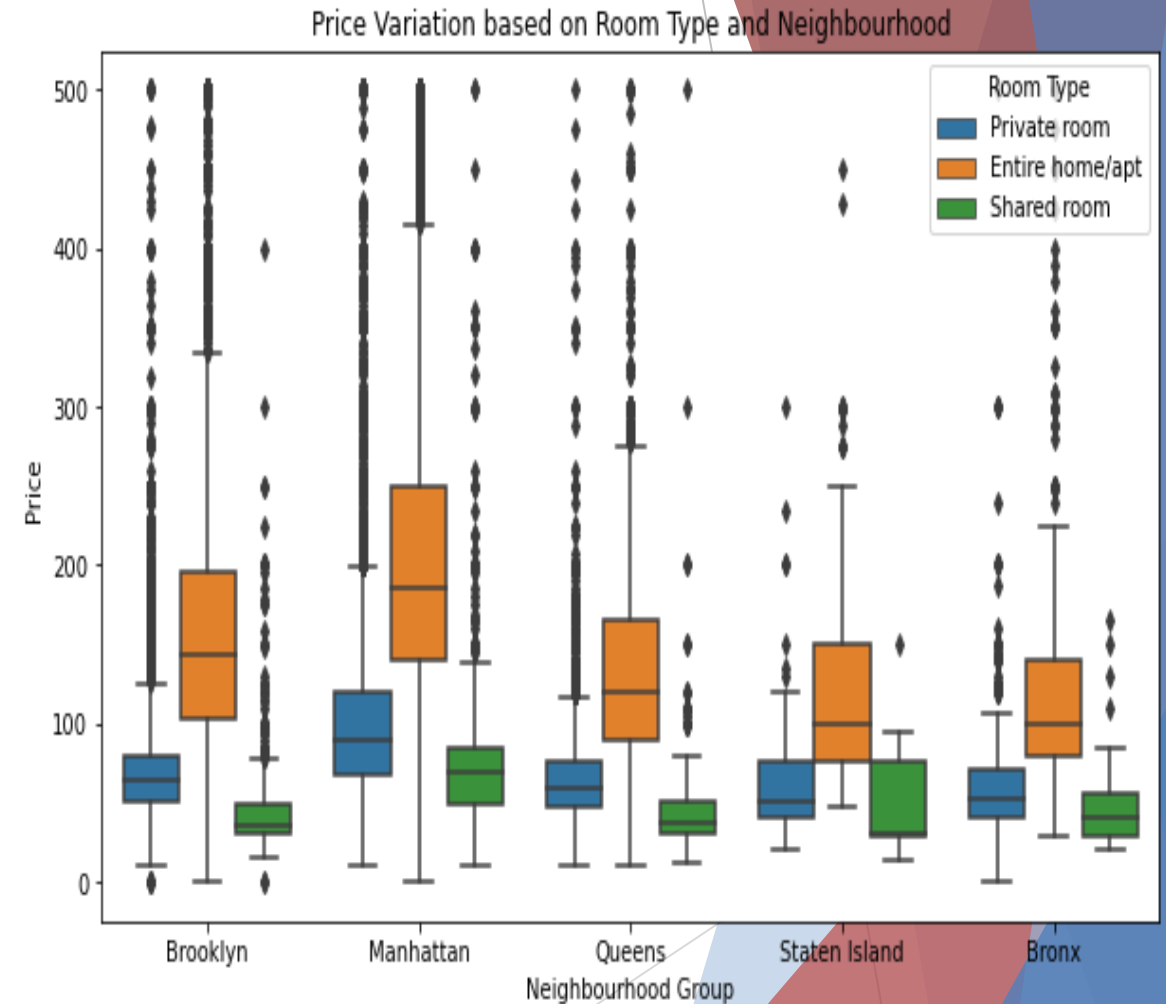
# Price Range Preferred by Customers

- ▶ Summary: The histogram represents the distribution of preferred price ranges for Airbnb listings in New York City. From the analysis, we can observe the following:
  1. The majority of customers prefer listings in the price range of \$50 to \$150 per night, as indicated by the highest frequency of listings within this range.
  2. There is a gradual decrease in the frequency as the price range increases, suggesting that a higher price range corresponds to a lower demand.
- ▶ Conclusion: Based on the analysis of preferred price ranges, the following insights can be derived:
  1. It is essential for the Head of Acquisitions and Operations, NYC, to focus on acquiring listings within the popular price range of \$50 to \$150 per night. This price range aligns with the preferences of the majority of customers and is likely to attract higher booking rates.
  2. The Head of User Experience, NYC, can optimize the listing order and improve the visibility of listings within the preferred price range to enhance the user experience and increase customer satisfaction.
- ▶ By considering the preferred price range of customers, Airbnb can make informed decisions regarding property acquisitions, pricing strategies, and user experience enhancements, ultimately driving revenue growth and customer engagement.



# Understanding Price Variation w.r.t Room Type & Neighbourhood

- ▶ Summary: The box plot illustrates the price variation of Airbnb listings in different neighborhood groups based on the room type. Here are the key observations:
  1. Manhattan has the highest median prices across all room types, indicating that it is generally the most expensive neighborhood.
  2. Entire homes/apartments tend to have higher median prices compared to private rooms and shared rooms in all neighborhood groups.
  3. Brooklyn and Queens offer relatively more affordable options, with lower median prices across all room types compared to Manhattan.
- ▶ Conclusion: The analysis of price variation based on room type and neighborhood provides valuable insights for decision-making:
  1. The Head of Acquisitions and Operations can focus on acquiring more listings in Manhattan, as it offers higher potential for generating revenue due to higher median prices.
  2. The Head of User Experience can highlight the price differences among room types and neighborhoods to provide users with a clearer understanding of the pricing structure. This can help users make informed decisions and improve their overall experience.
- ▶ By considering the price variation based on room type and neighborhood, Airbnb can tailor their strategies for property acquisition, pricing optimization, and user experience enhancement, ultimately driving customer satisfaction and business growth.



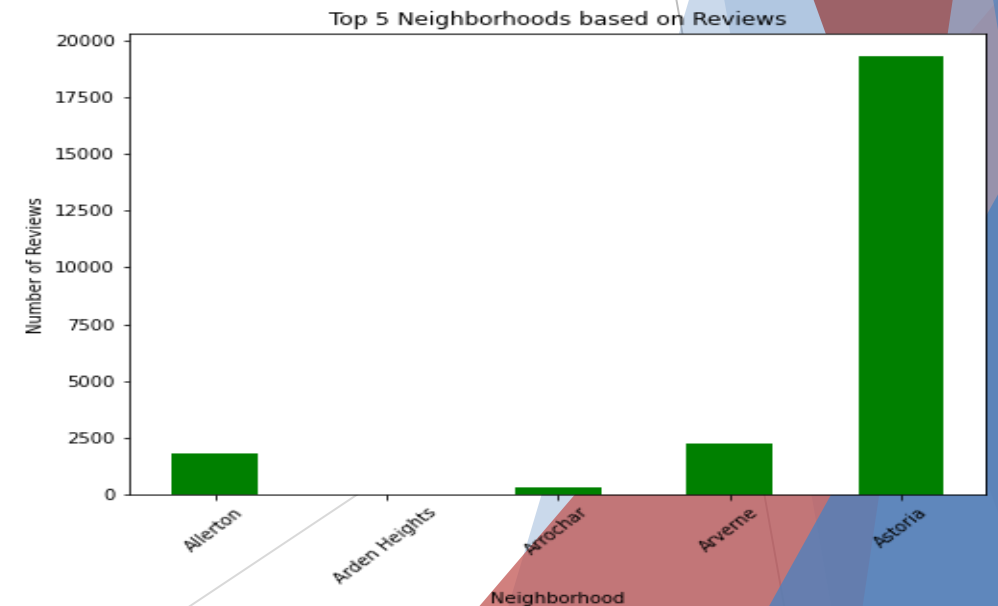
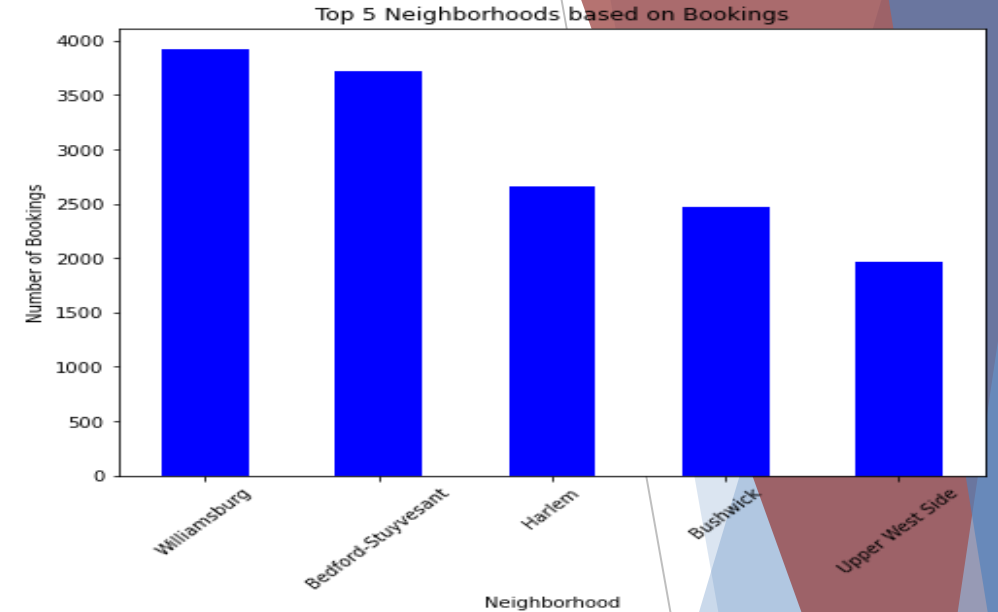
# Price Variation with respect to Geography

- ▶ In the analysis of price variation across different geographical areas in New York City, we utilized a map visualization to showcase the average prices by neighborhood. Here is a summary of the findings and the conclusion of our analysis:
- ▶ Summary:
  - The map visualization provides an overview of the average prices of Airbnb listings in different neighborhoods of New York City.
  - The markers on the map represent each neighborhood, with the average price displayed as a popup.
  - Higher-priced neighborhoods are indicated by markers with higher average prices, while lower-priced neighborhoods have markers with lower average prices.
  - The color coding on the map helps distinguish neighborhoods with varying price ranges.
- ▶ Conclusion:
  - The analysis reveals that the average prices of Airbnb listings vary significantly across different neighborhoods in New York City.
  - Some neighborhoods have higher average prices, indicating a higher demand or more upscale offerings, while others have lower average prices, making them more affordable for travelers.
  - This information can be valuable for potential Airbnb hosts and guests, as they can identify neighborhoods that align with their budget and preferences.
  - Additionally, this analysis can assist the Head of Acquisitions and Operations and the Head of User Experience in understanding pricing dynamics and making informed decisions related to property acquisition and user experience enhancements.
- ▶ Overall, the map visualization effectively represents the price variation across different geographical areas in New York City, providing actionable insights for stakeholders involved in the Airbnb market.



# Popular Neighborhoods

- ▶ Summary: Based on the analysis of the dataset, the top 5 neighborhoods with the highest number of bookings are Williamsburg, Bedford-Stuyvesant, Harlem, Bushwick, and Upper West Side. These neighborhoods attract a significant number of visitors and have a high demand for Airbnb accommodations.
- ▶ On the other hand, the top 5 neighborhoods with the highest number of reviews are Allerton, Arden Heights, Arrochar, Arverne, and Astoria. These neighborhoods have received a substantial number of reviews, indicating active engagement and feedback from customers.
- ▶ Conclusion: The top neighborhoods based on bookings and reviews provide valuable insights for the Head of Acquisitions and Operations and the Head of User Experience at Airbnb in New York City. These neighborhoods demonstrate high demand and customer engagement, indicating their popularity among visitors.
- ▶ For the Head of Acquisitions and Operations, this information can help in identifying the neighborhoods with the highest potential for business growth and expansion. It allows them to focus their efforts on these neighborhoods to attract more hosts and increase the number of available listings.
- ▶ For the Head of User Experience, understanding the top neighborhoods in terms of customer reviews can provide valuable feedback for improving the overall user experience in these areas. It highlights the neighborhoods where customers have had positive experiences and where efforts can be made to further enhance guest satisfaction.
- ▶ Overall, the analysis of the top neighborhoods based on bookings and reviews contributes to data-driven decision-making and strategic planning for Airbnb in New York City.



# Conclusion

## Key Findings and Insights:

1. Popular Neighborhoods: The analysis revealed the top neighborhoods in terms of customer bookings and ratings. Williamsburg, Bedford-Stuyvesant, and Harlem emerged as the most popular neighborhoods with high demand and positive customer reviews. This indicates the potential for growth and success in these areas.
  2. Price Preferences: Customers showed a preference for affordable price ranges, with a majority of bookings falling within the \$50-\$200 range. This suggests that pricing plays a crucial role in attracting customers and maximizing occupancy rates.
  3. Room Type and Neighborhood: The analysis highlighted the distribution of room types across different neighborhoods. It was observed that entire homes/apartments were the most common accommodation type in most neighborhoods. Understanding these preferences can help optimize the listing offerings in each neighborhood.
- Implications and Recommendations: For the Head of Acquisitions and Operations, NYC:
- Focus on the popular neighborhoods: Allocate resources and efforts towards acquiring more listings in popular neighborhoods like Williamsburg, Bedford-Stuyvesant, and Harlem to meet the high demand.
  - Monitor price competitiveness: Regularly analyze the pricing strategy to ensure it aligns with customer preferences and remains competitive within the market.
- For the Head of User Experience, NYC:
- Enhance customer experience in popular neighborhoods: Collaborate with hosts in popular neighborhoods to provide superior amenities, personalized services, and efficient customer support.
  - Improve communication and transparency: Establish clear communication channels to address customer queries and concerns promptly, ensuring a seamless booking experience.

## Strategic Actions:

1. Market Expansion: Explore opportunities for expansion into emerging neighborhoods that show potential for growth and attract a diverse customer base.
2. Targeted Marketing: Develop targeted marketing campaigns to promote listings in popular neighborhoods, showcasing unique features and attractions to attract more bookings.
3. Price Optimization: Continuously monitor pricing trends and adjust rates based on demand, seasonality, and competitor analysis to maximize occupancy and revenue.