

# Boston Airbnb Data Visualization



**IE6600**

Computation and Visualization for Analytics

**Submitted by:**

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## Introduction

This project centres on analysing Airbnb data in Boston, delving into the transformative impact of the platform on the hospitality industry. The goal is to craft an interactive dashboard, inviting users to explore and extract the focus on distilling the essence of Airbnb's influence on travel accommodations. This envisions a dynamic dashboard empowering users to actively engage with and comprehend the intricate patterns and trends within the city's lodging landscape.

## Problem Statement

The primary objective of this project is to understand the patterns and trends in the Boston Airbnb market. The project seeks to answer several questions: What is the average price of listings in different neighbourhoods? What types of rooms are most common? Which is the highest rated Airbnbs? Which are the cheapest and top Airbnbs? By answering these questions, the project aims to provide a comprehensive overview of the Airbnb market in Boston.

## Data Description

The Boston Airbnb dataset is a rich source of information about Airbnb listings in Boston. It includes a variety of details about each listing, such as the host's name, the neighbourhood of the property, the type of room being offered, the price per night, the minimum number of nights a guest can book, the number of reviews the listing has received, and the date of the last review.

This dataset encompasses a total of 4,033 Airbnb listings in Boston. These listings are classified into distinct categories, including entire apartments, private rooms, hotel rooms, and shared rooms. Additionally, these accommodations are further delineated based on the number of bathrooms and other shared spaces within each category.

Moreover, the dataset includes information about the availability of each listing, which can shed light on the occupancy rates of Airbnb properties in Boston.

Dataset Link: [Dataset](#)

## Methodology

The project employs Tableau, a powerful data visualisation tool, to create an interactive dashboard. The process begins with data cleaning and pre-processing. Once the data is clean and appropriately formatted, it is imported into Tableau.

1. **Map Chart:** The map chart provides a geographical representation of Airbnb listings across Boston. This visual representation allows users to quickly understand the distribution and concentration of listings in different neighbourhoods.
2. **Bar Chart:** The bar chart displays the top 5 reviewed units. Bar charts are excellent for comparing categorical data, and in this case, it allows users to easily identify the most popular units based on the number of reviews.
3. **Heat Map:** Each cell corresponds to a specific Airbnb unit and the colour of the cell indicates the number of reviews that unit has received. Darker colours represent a higher

number of reviews. This visualization allows users to easily identify which Airbnb is the most reviewed, indicating their popularity among guests.

## Design Process

The design process is iterative, starting with simpler visualizations to understand the distribution of variables. For example, a bar graph is used to visualize the average price of listings in different neighbourhoods. This provides a clear picture of how prices vary across neighbourhoods.

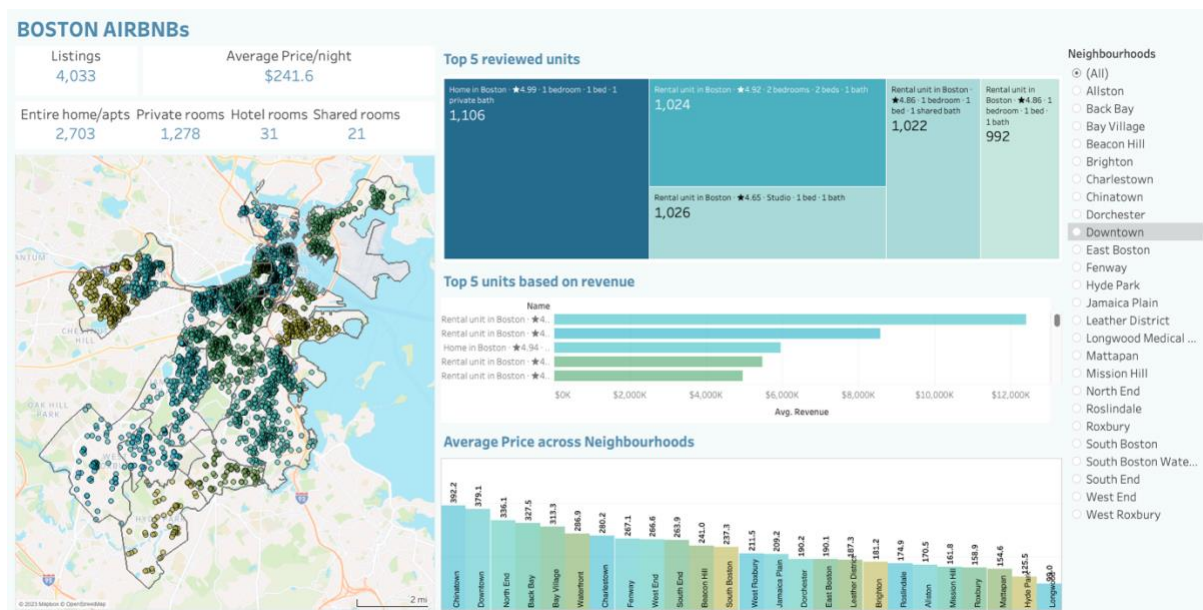
The project then moves on to more complex visualizations like heatmaps. A heatmap of top 5 viewed units for each neighbourhood is created. This visualization allows for a quick comparison of prices across different neighbourhoods, highlighting areas with more popular Airbnb.

A bar graph illustrates the average prices of Airbnb accommodations across different neighbourhoods in Boston. It provides a visual representation, allowing us to discern the most affordable and the priciest units available in the city.

In addition, there is a map displaying individual locations along with total count of Airbnb units. Upon selecting a specific feature from the neighbourhood listing, the map automatically zooms in to provide more detailed insights and information about that specific location.

The dashboard is designed to be interactive, with filters that allow users to select which data they want to view.

## Key Insights from the Data



Certain neighbourhoods consistently show higher average prices, suggesting they might be more popular or offer higher-end listings. The interactive filters allow users to dig deeper into the data, exploring how factors like room type or number of reviews impact pricing.

1. **Map of Listings:**

The map visualization provides a geographical overview of Airbnb listings across Boston. The size of the circles indicates the concentration of listings in each area. Certain areas, particularly those in the downtown region, have a higher concentration of listings, suggesting these are popular areas for Airbnb rentals.

2. **Top Reviewed Units:**

This bar chart shows the top 5 reviewed units, all of which are located in the downtown area. The high number of reviews for these units suggests that they are popular choices among guests, possibly due to factors like location, price, or amenities.

3. **Top Units by Revenue:**

This visualization shows the top 5 units based on revenue, again all located in the downtown area. These units are likely priced higher and/or have higher occupancy rates, contributing to their high revenue. This could indicate a preference among guests for these types of listings.

4. **Average Price by Neighbourhood:**

This bar chart shows the average price of listings in each neighbourhood. Key insight: There is significant variation in average price across neighbourhoods, with downtown areas showing the highest prices. This could reflect differences in demand, property values, or the types of listings available in each neighbourhood.

5. **Tooltip:**

The tooltip provides detailed information about a specific rental unit in Boston. It indicates that the rating of the unit, no of bedrooms and bathrooms offered, and its neighbourhood location. It also provides information about the date of last review, and the total number of reviews.

In conclusion, this project provides a comprehensive analysis of the Boston Airbnb market. The interactive dashboard allows users to explore the data and draw their own insights. The findings from this project could be useful for potential Airbnb hosts, guests, and even policymakers.