Boston **Airbnb** Analysis

By **Tiago** Santos

Project Overview

Airbnb is an online marketplace for arranging homestays, acting as a broker. The seller, known as a "host" posts a listing on **Airbnb**'s website with an offer, and customers make a selection from all the offers posted. This analysis is based on official data provided by **Airbnb** for the city of Boston from the years 2008 (the year in which **Airbnb** began operation) to 2019 (the current year).

Knowing the DataSet

'listings.csv': This dataset has **6247 rows** of data, each with **106 attributes**

'reviews.csv': This dataset has **199,106 rows** of data, each with **6 attributes**

Project Objectives

Spatial data analysis:

- How location ratings change across the neighbourhoods?
- How is the Super Host distributed across the neighbourhoods?

Price and supply analysis:

- Distribution of Property type in Neighbourhoods
- Is there a relationship between supply and price?
- Similarly, is there a relationship considering the different room types available?
- Is it possible to stay at a Super host for under $100 per night?

Demand analysis:

- What is the total demand for Airbnb per year, and across all the years available?
- Are there any trends in the demand for Airbnb?

Spatial data analysis

- Airbnb users rate their stay on the basis of location, cleanliness and other parameters.

- We use the **location scores** as an indicator of the appeal of the neighbourhood.

- The concentration of the review locations is near **Tourist** areas and **Business** locations.

- Boston Public Garden.
- Boylston St.
- St. Stephen`s Catholic Church.
- Faneuil Hall Marketplace.
- Financial District.

Boston Airbnb Review Scores Location
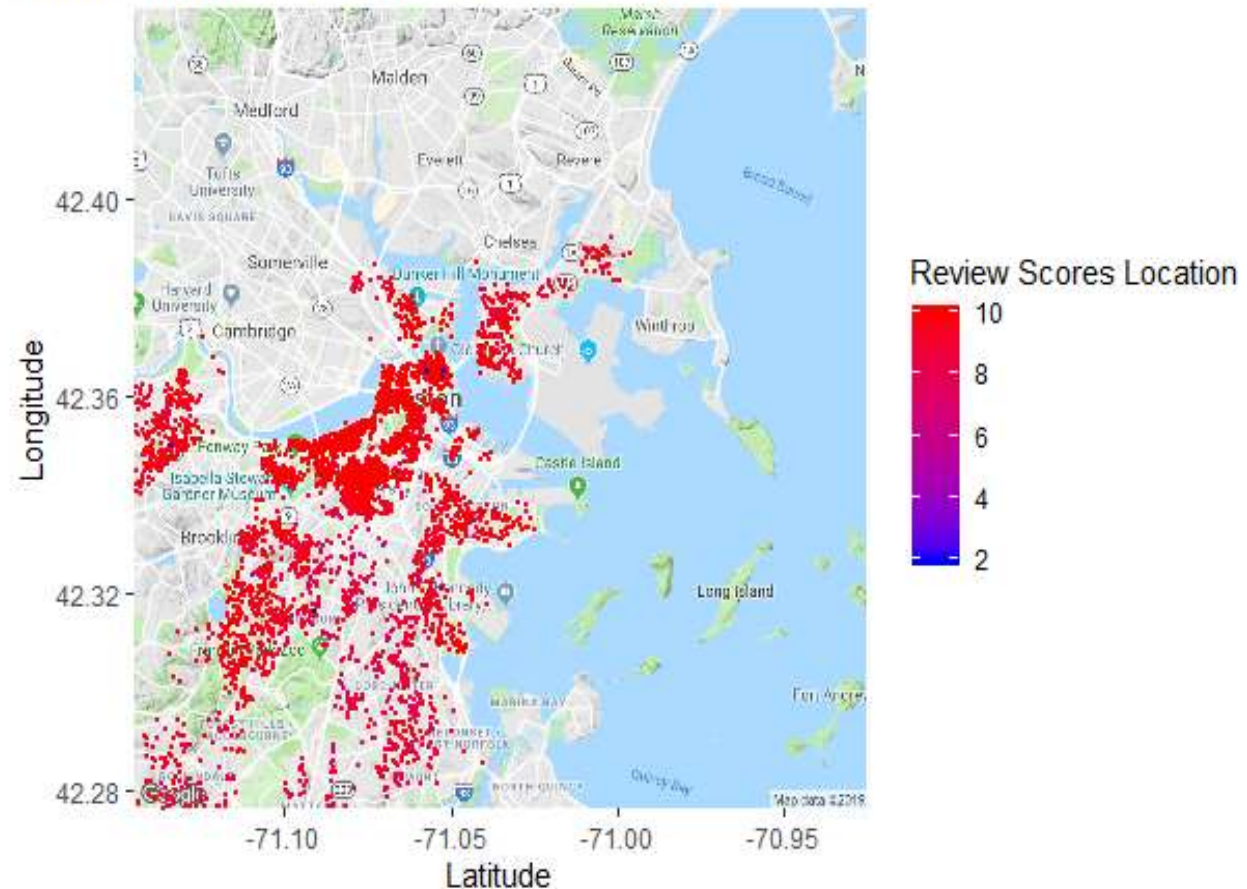
Spatial data analysis

Airbnb wards the title of "Super host" to a small fraction of its dependable hosts. This is designed as an incentive program that is a win-win for both the host, **Airbnb**, and their customers. The super host gets more business in the form of higher bookings, the customer gets improved service and Airbnb gets happy satisfied customers.

Super Hosts are spread across all the neighbourhoods of **Boston** and not concentrated in one area.

Superhost distribution across Boston
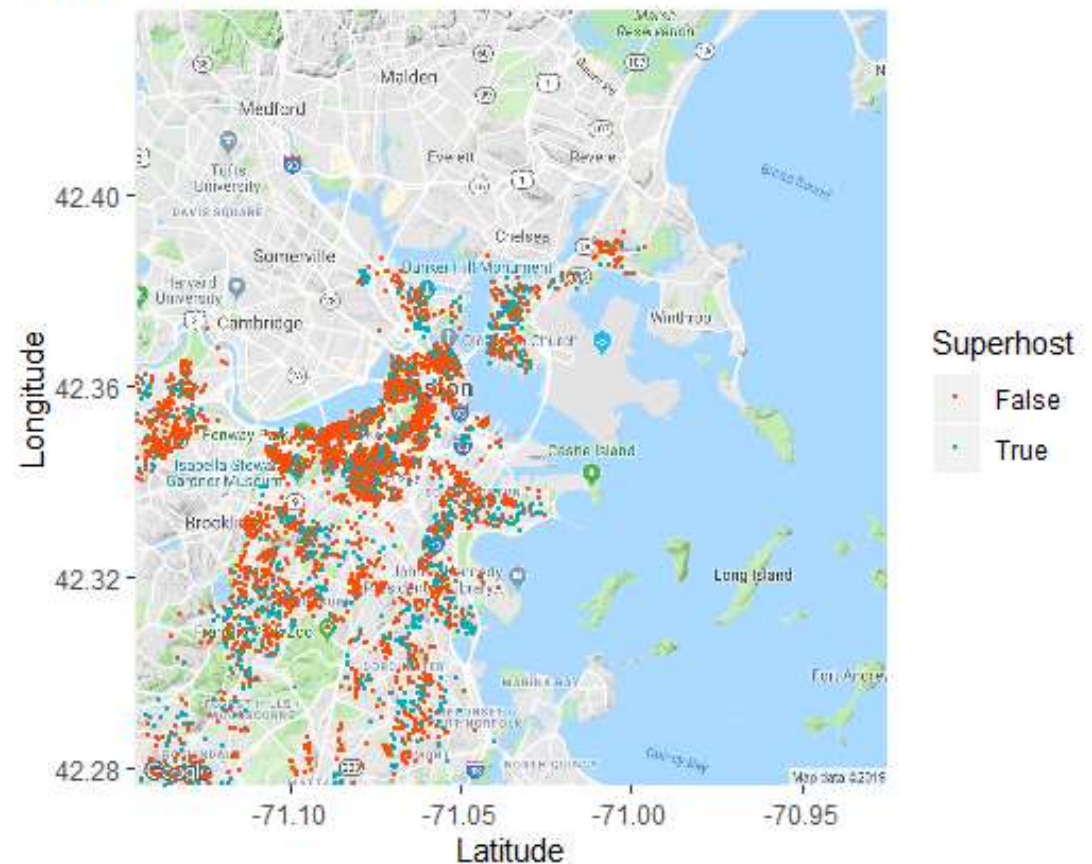
Is it possible to stay at a Super host for under $100 per night?

- It is possible to stay in most of neighbourhood in a Super Host with prices starting at **$19** per night.

Superhost < $100 per night
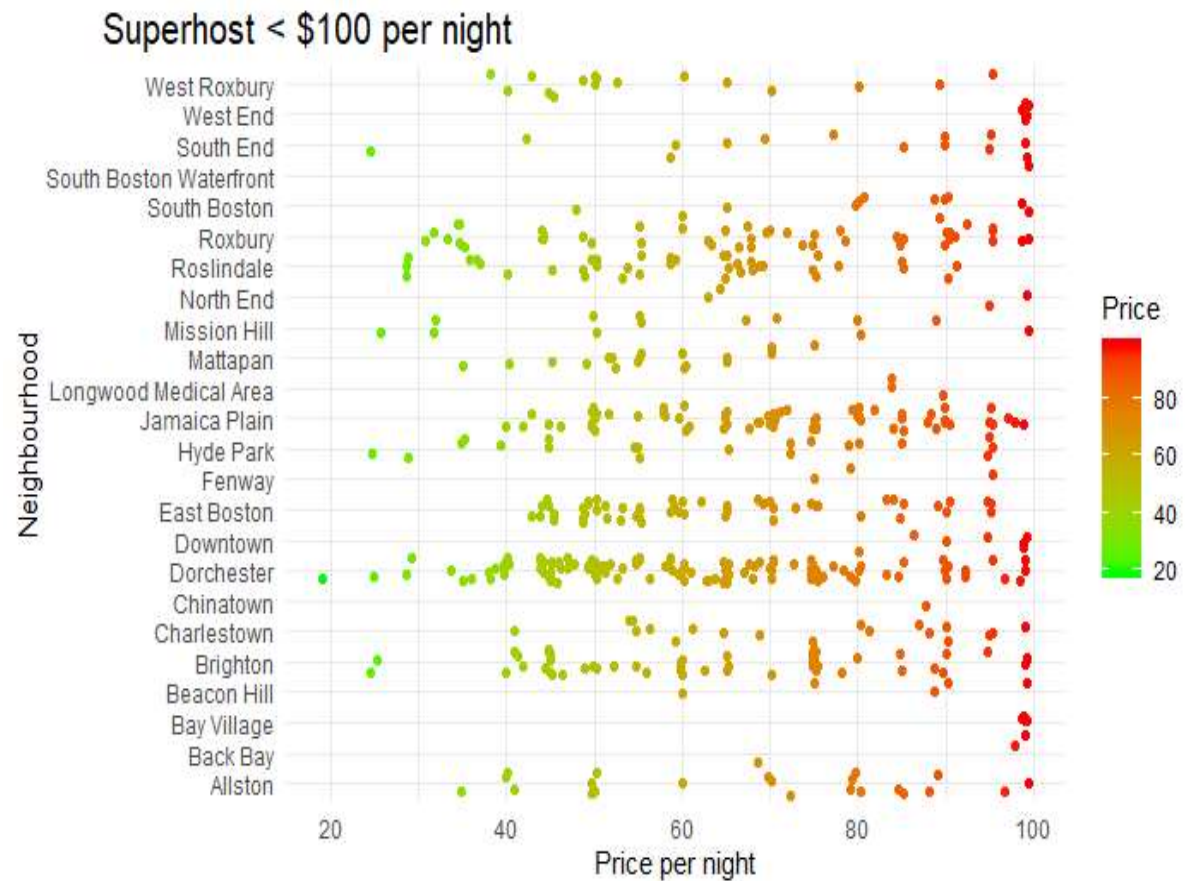
Price and supply analysis

Distribution of Property type in Neighbourhoods

- The Apartment style listings are highest in number for most of the neighbourhoods.
- Roslindale and Mattapan have a lot more House style listings than apartment.
- Condominium style listings are common in South Boston.
- Serviced apartment style listings are common in Fenway.
- Townhouse style listings are common in Roxbury.

Listed Property Types by Neighbourhood
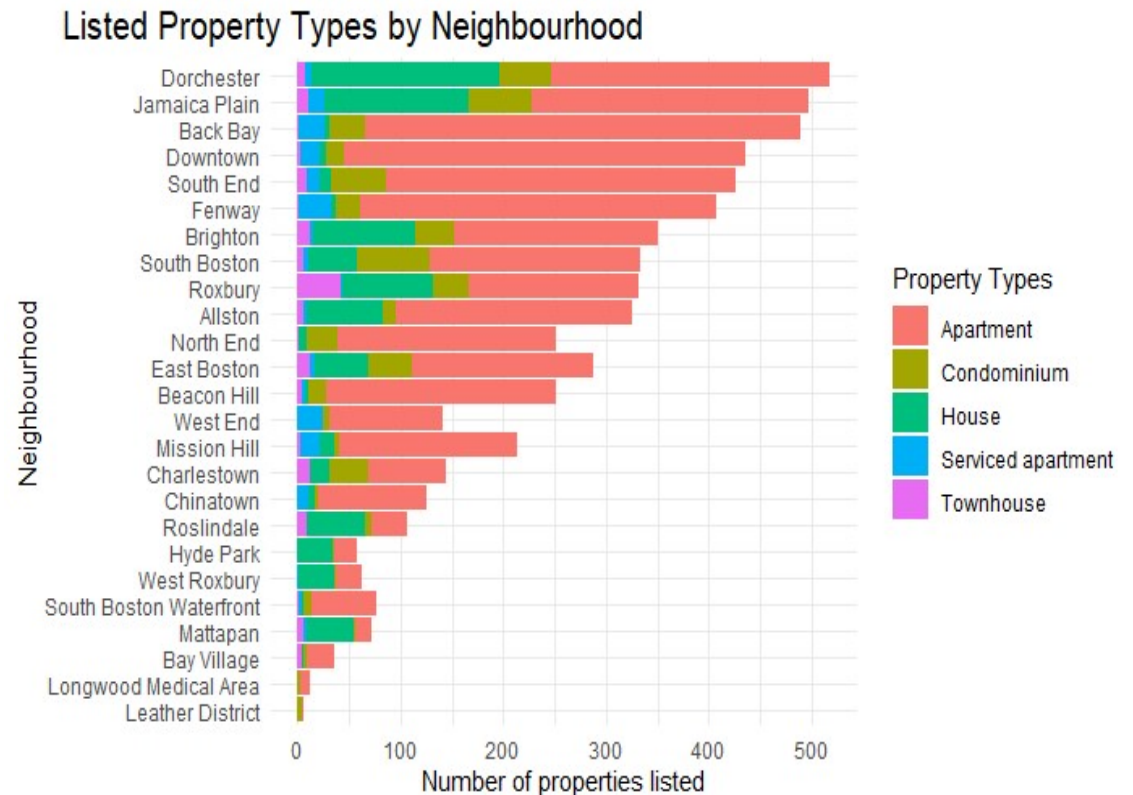
Price and supply analysis

- The supply of Airbnb in Boston rises steadily and consistently, until **2012**, when the supply increases exponentially and peaks at **2014**. From 2014 onwards the supply follows a consistent decline.

- The average price of Airbnb listings generally stays within the range of **$100** to **$200**, with the exceptions of **2009**,**2013** and **2017**, where prices rise above $200.
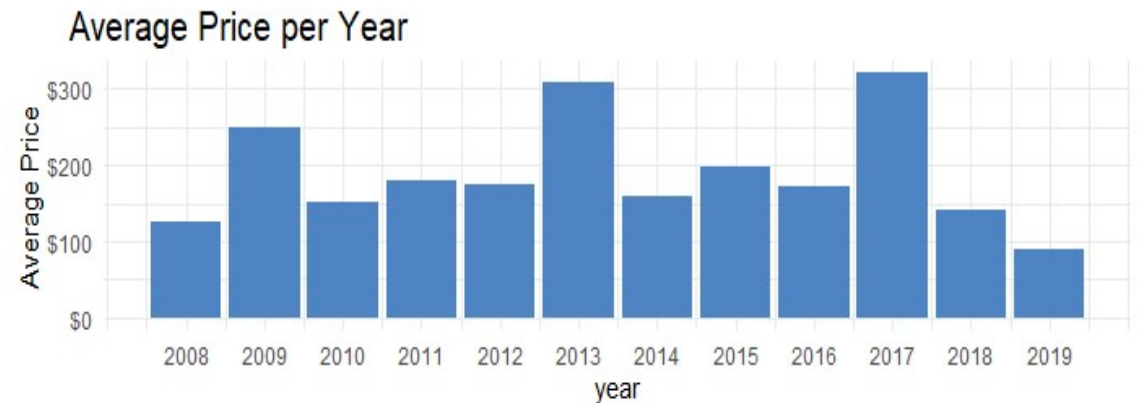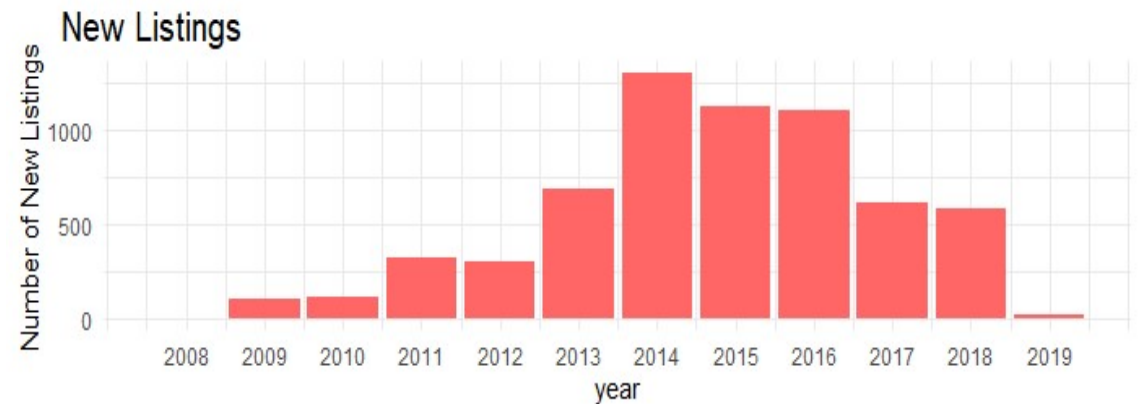
Price and supply analysis

- The New Listings for Entire Home Apartment has the same comportment as the all listings.

- Similar to the average price of all listings, the average price of entire homes peaks every four years, with peaks occurring at **2009**, **2013**, and **2017**.

- The range for the average price is generally between **$150** and **$250**.
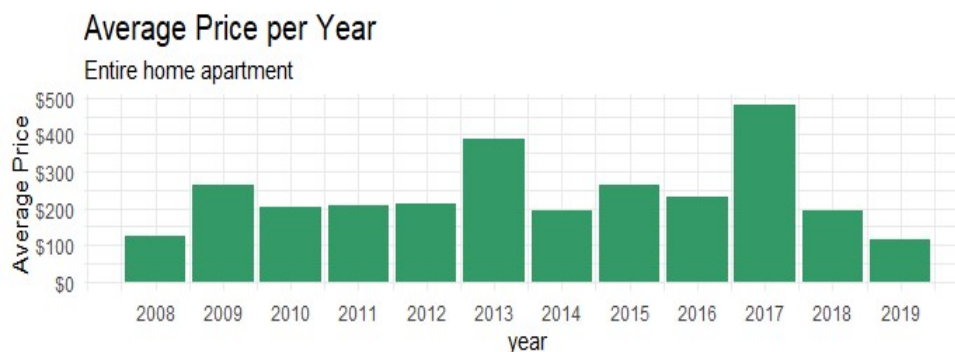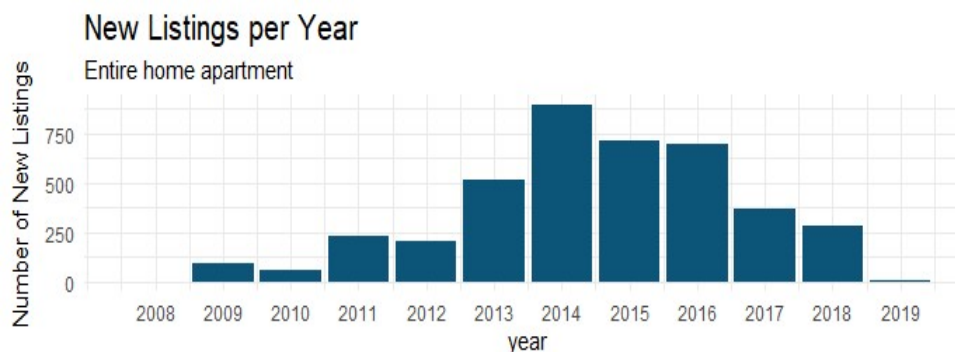
Price and supply analysis

- The New Listings for Private room has a different compartment of the all listings. The peak occurs in **2015** and the supply decrease until **2017** and increase in **2018**.

- Unlike the average price per year for all listings, and for Entire Home apartments, the average price per year for private rooms does not follow a trend in price peaks every 4 years.

New Listings per Year
Private room

Average Price per Year
Private room
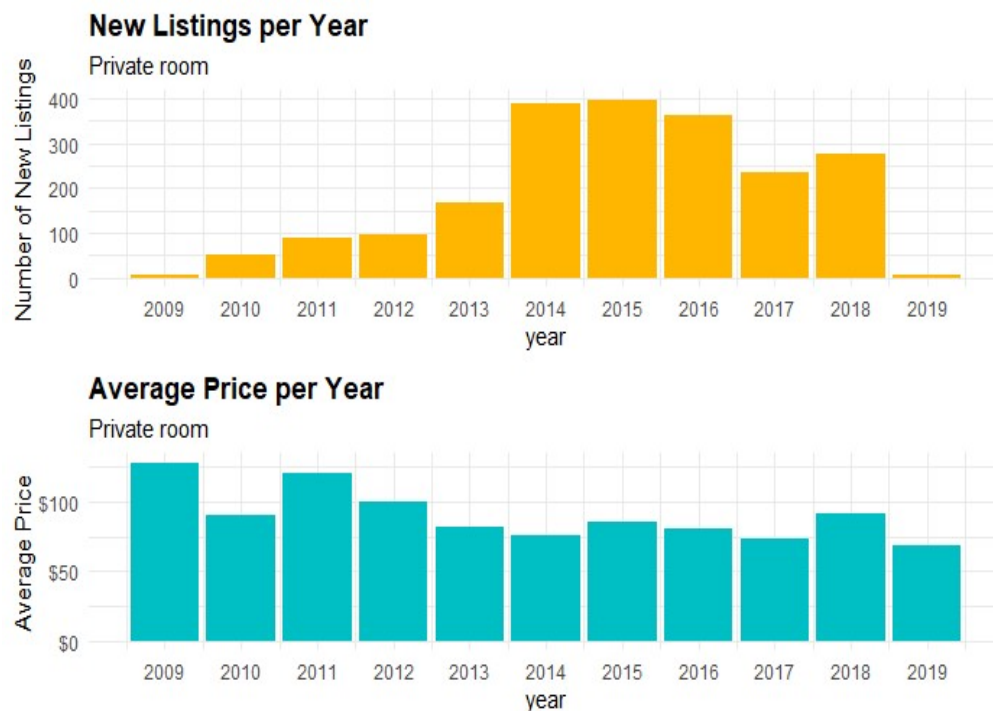
Demand analysis

- The graph shows a slow and linear increase between the years **2009** and **2012**.

- From **2012** onwards, the demand for Airbnb increases dramatically.

Measuring airbnb popularity from 2009 to 2018

x axis: year of review, y axis: number of reviews
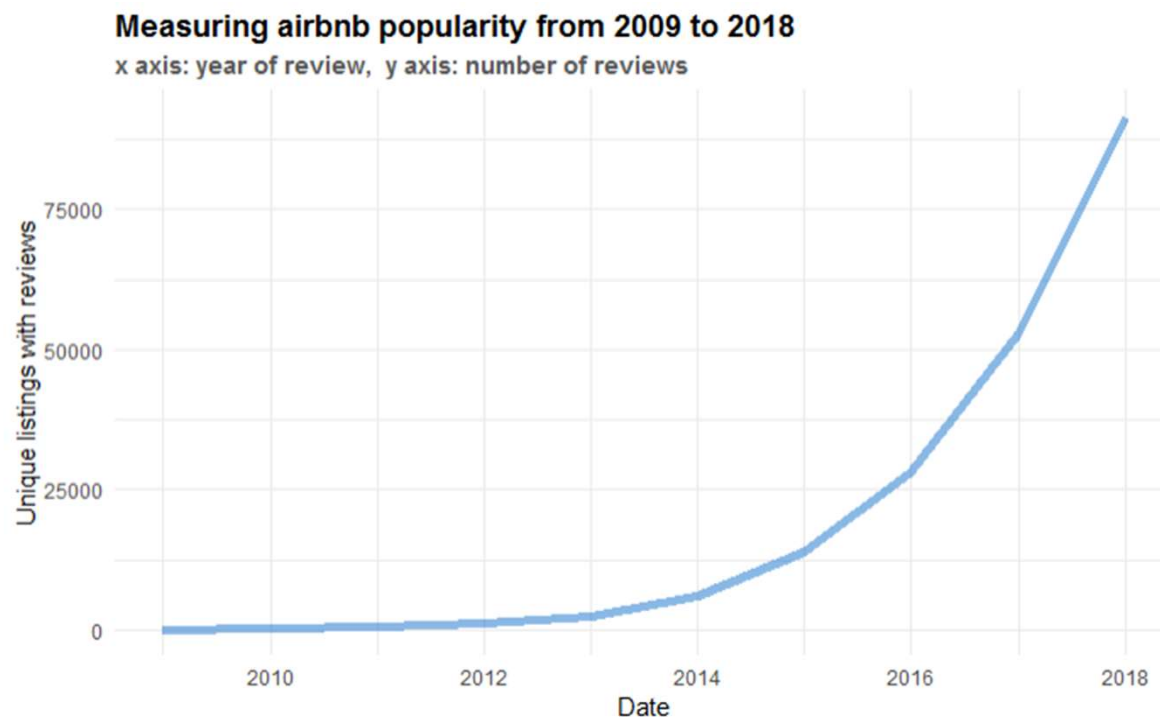
Demand analysis

- The graph shows the same increase in demand exhibited in last graph.

- Additionally, it indicates wave-like function behaviour beginning from **2014**. This can be interpreted as seasonal demand, as the demand for **Airbnb** may rise during some months and fall during others.

Measuring airbnb popularity from 2009 to 2018
x axis: day of review, y axis: number of reviews
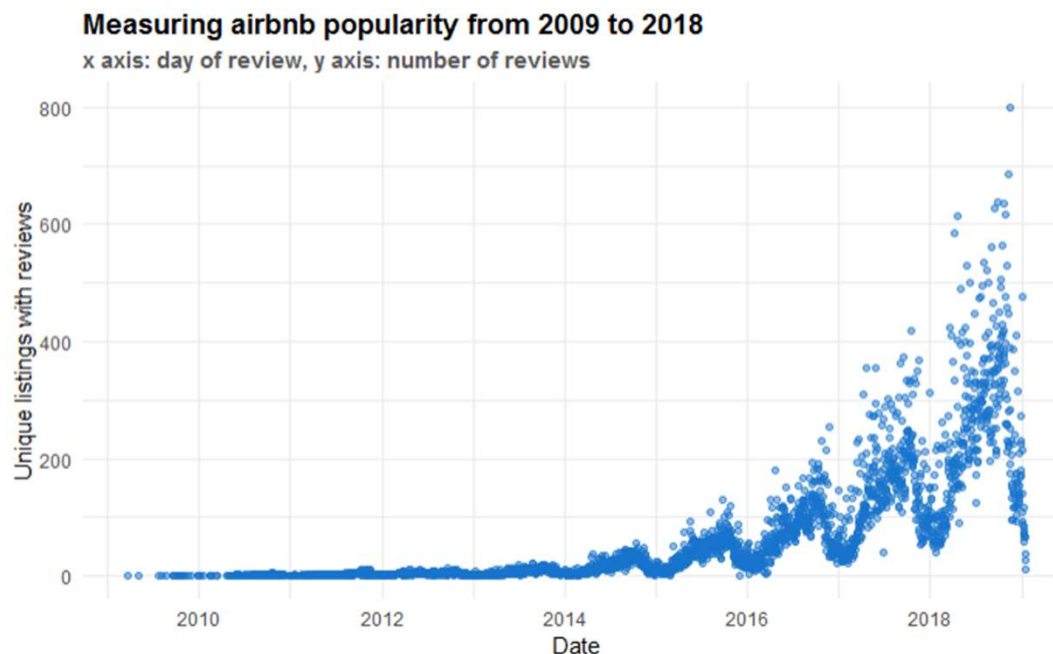
Demand analysis

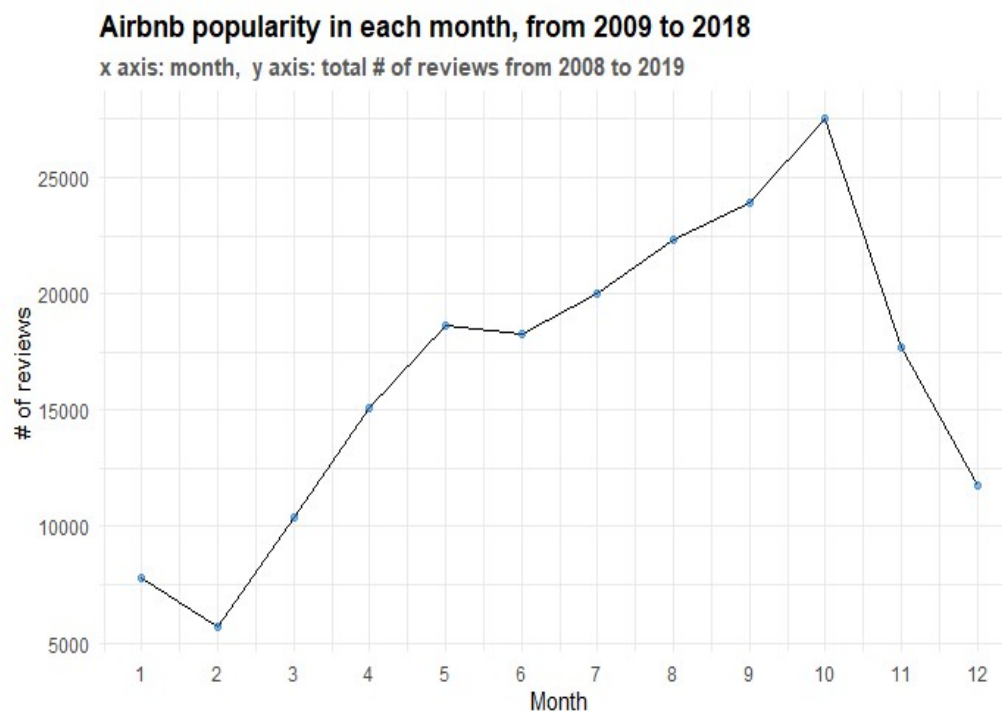- The demand trend follows what we expect for travel seasonality, with the **summer** holiday bringing in more demand during June and July, and large events in the city of **Boston** bringing in demand during September and October.
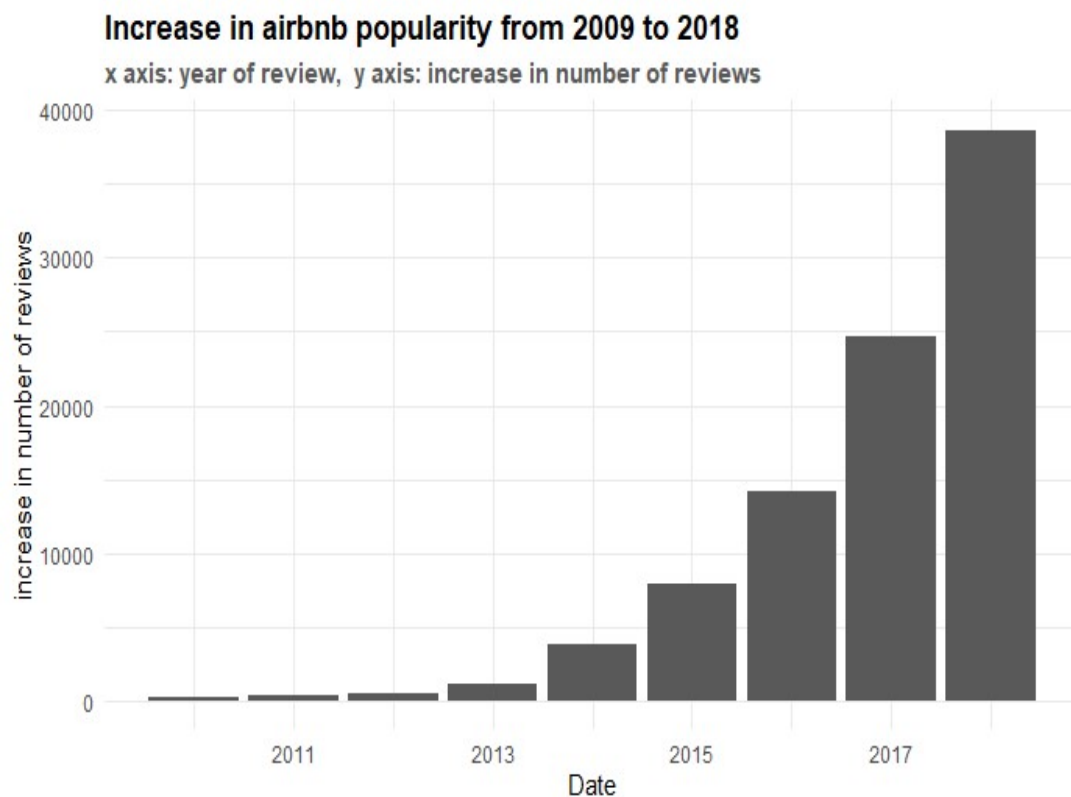

Airbnb popularity in each month, from 2009 to 2018
x axis: month, y axis: total # of reviews from 2008 to 2019

Demand analysis

- There is a marginal increase in demand year by year in **Airbnb**.

$$demand\ growth\ rate = \frac{current - past}{past}$$

2009	N/A
2010	9.3
2011	2.19
2012	0.87
2013	1.02
2014	1.6
2015	1.3
2016	1.008
2017	0.877
2018	0.73

Increase in airbnb popularity from 2009 to 2018

x axis: year of review, y axis: increase in number of reviews

Key Takeaway

- There aren't any correlation between **price**, **demand** and **supply**.

- The new listings has **decreased** in the last years.

- The demand has **increased** year by year.

- It is possible to stay in most of neighbourhood in a Super Host with prices starting at **$19** per night.

THANK YOU