

Predication of China's Rental Housing Market

Objective:

- To predict the price trend of real estate in China from the interpretation of the trend of Airbnb listing price.
- To provide the investors, including individual and institutional ones, with insights in real estate investing for rental and management.
- Provide house owners with insights into when to and how to list their properties for rental or for sale effectively, and how to decorate their houses to gain more attention.

Background and Motivation:

The house price in China, especially in big cities including Beijing, Shanghai, Shenzhen and Guangzhou, has been growing steadily. The stable high prices came amid sustained government efforts to rein in housing speculation over the past few years, with each city rolling out targeted measures to keep housing inflation within a proper range. Thus, investing in rental properties is a relatively convenient and secure personal investment method for people who own extra real estate. The emergence of Airbnb makes the real estate market in China further flourishing, as Airbnb allows individuals to rent their apartments/houses to people who need a short stay. It has been a trend that people prefer to choose Airbnb instead of hotels during vacation, the reasons are that tourists want to explore the world by interacting with locals while paying lower lodging rates.

More recently, an increasing number of people regarded hosting on Airbnb as a real career, not only near landmark clusters but also in rural villages outside downtown. Local government encourages redesigning local, traditional stilt-style homes as functional homestays on Airbnb, and travel blogs as well as influencers highlight the authentic experience in these homestays, attracting tremendous bookings. However, it is hard to make decisions about where to invest in housing rental when landmark sightseeing is no longer a decisive factor. This problem is due to the lack of information on the correlation between price and geography, and the factors influence such correlation. Thus, it is extremely important to understand the price distribution by geography and what are the leading factors that lead to such distribution. Here I propose to conduct a full analysis on the listing information of all types of homestays in major cities in China. I will focus on the price and demand distribution by geography and time under different factors.

What we will learn after the analysis of Airbnb listing data in the top 4 largest cities in China:

1. Growth of housing price in China year by year
2. The price distribution by geography and time
3. Price of Airbnb listings and associated factors
4. The importance weight of different factors for customers with different backgrounds (age, gender, education, travel purpose, culture, etc.) to choose lodging places
5. Get a prediction of the price by geography and time

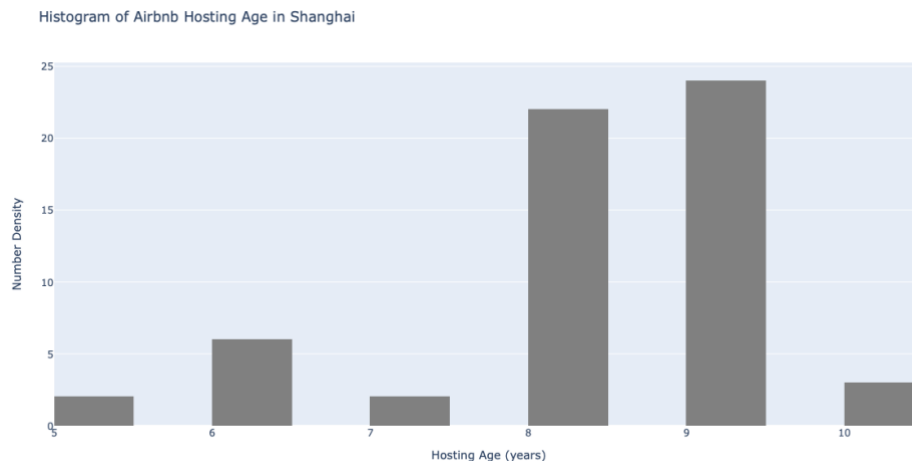
Plan and Preliminary Data:

Obtain data from [Inside Airbnb website](#), which is an open non-commercial dataset that allows for the analysis of housing listed on Airbnb. Here I choose Shanghai as an example. Similar analysis protocols can also be applied to other cities.

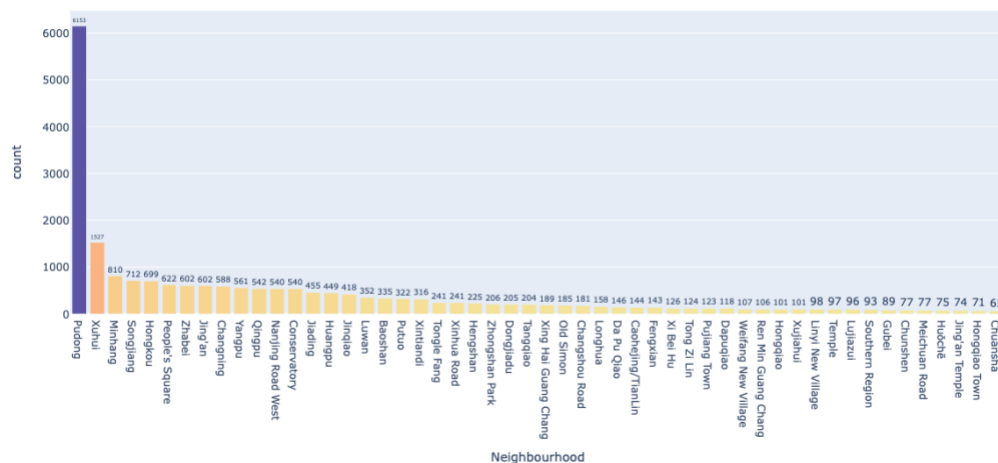
1. Explore Data and Analysis (EDA)

2. Analyze the supply and demand information of listed housing
3. Build Models based on different regression methods to predict the price in different districts and different month (time)

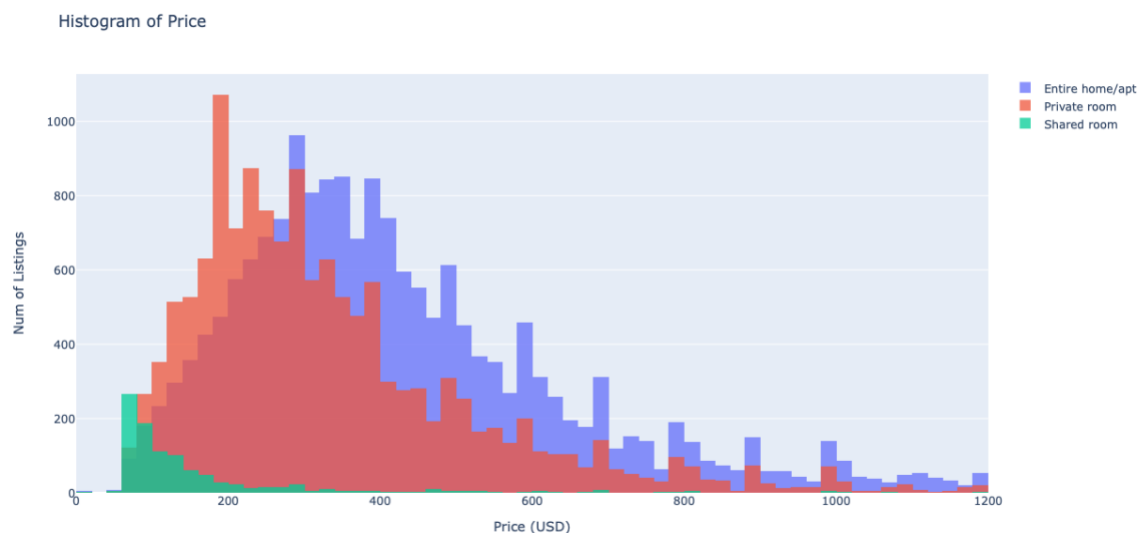
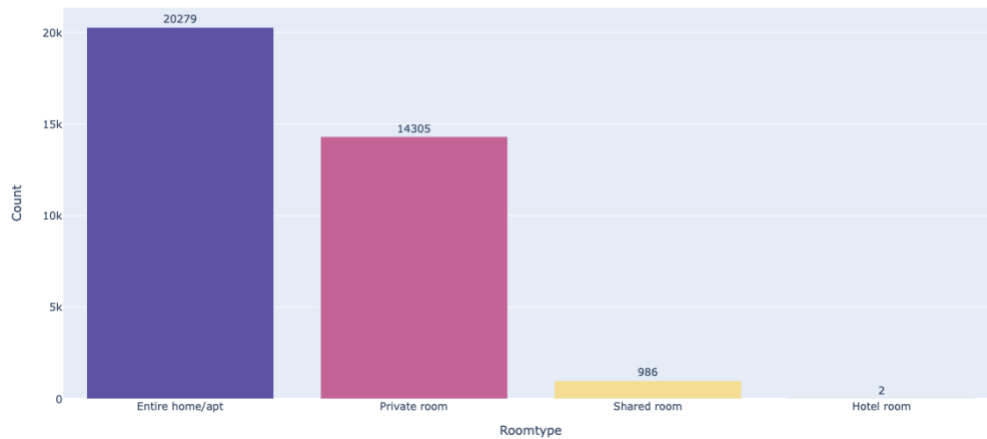
This preliminary analysis gives a statistical price and listing information on private hosting in Shanghai. It can be learned from the preliminary analysis that Airbnb housing is distributed over all districts in Shanghai with that in Pudong predominant. Near 60% of listings are Entire home/apartment, indicating that most listings on Airbnb Shanghai are more likely to be an investment instead of self-occupied. It can also be interpreted that these two room types are most popular. The price of the entire home is slightly higher than the private room, but not too much. It is possible that for a house with more than one room, renting as private rooms can be more profitable than as an entire house. Further analysis by taking the number of rooms into account is needed.



From the distribution of hosting time, it is found that all listings are more than 5 years hosting age, indicating that hosts are not new on Airbnb. The majority of the houses have been used for short rental for 8 to 9 years. It is noted that a fewer number of listing have a hosting age above 10 years. It is most likely that Airbnb just entered Shanghai 10 years ago.



From the location distribution, it is clear that the majority of Airbnb housing in Shanghai is concentrated in Pudong District. It can be interpreted that this location has the largest needs and customer flow.



- Airbnb hosts can list entire homes/apartments, private or shared rooms.
- Entire homes: Guests have the whole place to themselves. This usually includes a bedroom, a bathroom, and a kitchen.
- Private room: Guests have their own private room for sleeping. Other areas could be shared.
- Shared room: Guests sleep in a bedroom or a common area that could be shared with others.
- Entire home/apt count and percentage: 20279(57.0%); Private room: 14305(40.0%); Shared room: 986(2.8%).
- Near 60% of listings are Entire home/apartment, indicating that most listings on Airbnb Shanghai are more likely to be investment instead of self-occupied. It can also be interpreted that these two room types are most popular.