Invest in an Airbnb property in Seattle Area.

Data based approach using Seattle Airbnb data from a survey in 2016.

**Introduction**

A peer-to-peer marketplace business model has been growing in various service sectors and hosting is no exception. Airbnb operates on connecting individuals who want to rent out their properties (hosts) with people seeking accommodations (guests). With this model, entering the hosting business became highly desirable to many investors due to its comparable lower cost of entry.

For people who are interested to enter this domain, they might wonder which neighborhood and what property type and size with best revenue. The following sections looks at an estimated yearly revenue, calculated from the “listings.csv” table, for different properties in different neighborhoods to address these questions.

**Which neighborhood and what property type:**

For those considering entering the hosting business it is important to determine which area and what type of property that would yield highest revenue. Should one invest is an apartment at First Hill or a townhouse at Stevens. This section helps to answer these questions by looking at Figure 1 which shows the estimated full year annual revenue for different neighborhoods (top chart) and for different property types (bottom chart) in Seattle. The top chart shows that Broadway has the highest revenue of more than 6 million dollars while Belltown comes second with more than 5 million dollars. For the property type, the bottom chart shows that houses and apartments are with the highest revenue of more than 25 million dollars, with the houses being a bit higher than apartments.

A graph of a number of blue rectangular bars

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Figure 1: Estimated full year annual revenue for different neighborhoods (top chart) and for different property types (bottom chart) in Seattle.

**what size should I invest in:**

After narrowing down our focus on Broadway and Belltown neighborhoods and on houses and apartments property types, one might wonder how big or small the property should be in terms of the number of people to accommodate. Figure 2 is designed to address this question by looking at four bar charts for houses and apartments revenues by the number of beds and number of guests included at the two high revenue neighborhoods of Broadway and Belltown. After examining the Figure 2, one can see that an apartment with one bed and one guest at Broadway has the highest estimated annual revenue in Seattle area.

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Figure 2: Estimated full year annual revenue for apartments (top charts) in Belltown and Broadway by the number of guests and number of beds; similarly, the bottom charts for houses.

**Can I predict the annual revenue based on number of guests, number of reviews and** **review scores rating:**

After getting some insights about the hosting market in Seattle as far as what neighborhoods, what property type and what size for the property to invest in. It is useful to develop a machine learning tool that can predict the annual revenue based on some known features. For this prediction, the selected features were number of guests, number of reviews and the review score rating. Using different supervised machine learning models, the r2 error came low which illustrates low confidence in the prediction model. Figure 3 shows that there is a low correlation between the estimated revenue and the chosen features.

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Figure 3: features correlations

Conclusion

In this post, we looked at how to enter the hosting business in Seatle area. Also, how to choose the right type of property and what neighborhood to invest in.

1. We broke down different neighborhoods and different properties type by estimated annual revenue and it is found that apartments and houses are best property types and Broadway and Belltown are best neighborhoods to invest in.
2. After defining the property type and neighborhoods, it was important to choose the best property size in terms of number of guests to accommodate. It is found that apartments with one guest and one bed in Broadway is the best choice for investment.
3. There was an attempt to develop a machine learning tool to predict annual revenue based on number guests, number of reviews and review score rating. However, there is low correlation between the estimated revenues and the input features.