

# Christoph

About

## Seattle Airbnb Insights

Impact of Features and Amenities on Prices and Ratings for Seattle's Airbnb Listings



Christoph 19 hours ago · 5 min read

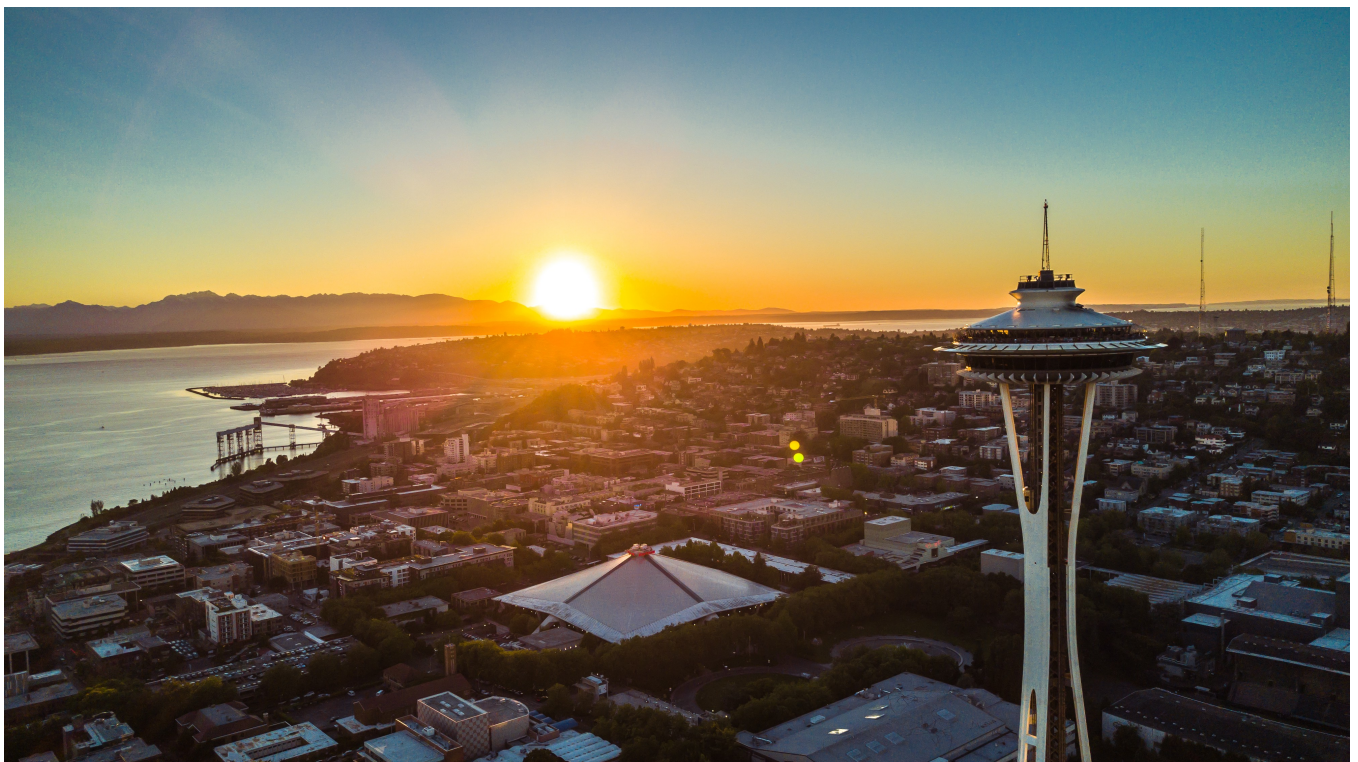


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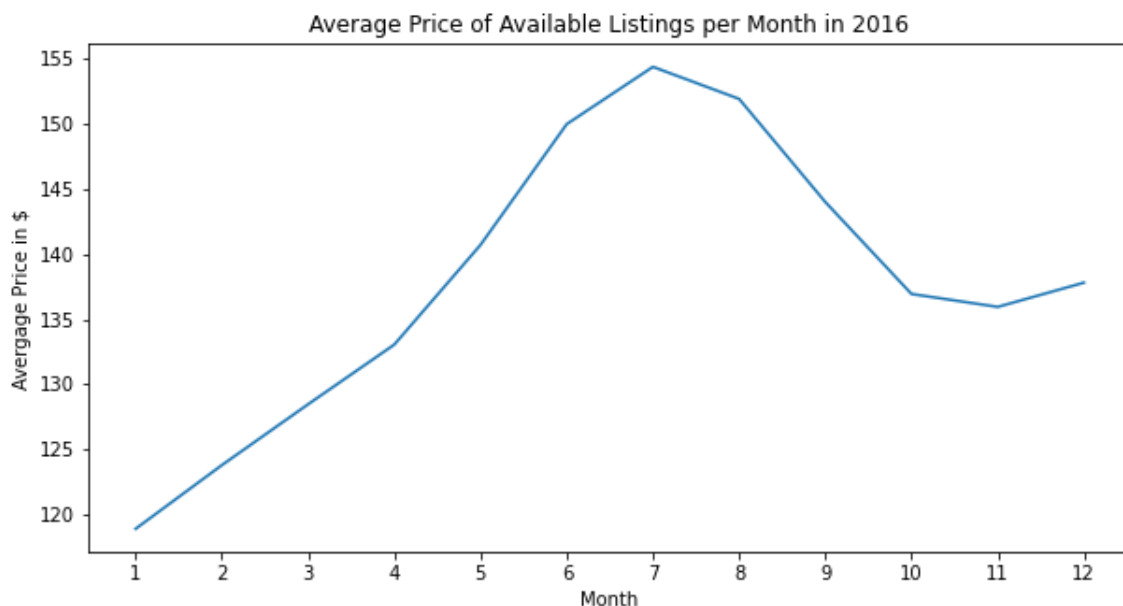
### Introduction

Airbnb created a new business case. Renting out private space to travelers and people looking for short- and medium-term stays. As it is booked only via its online presence, a lot of its data is publicly available. Here, I look into the Seattle AirBNB data, mostly for the year 2016. I explore the data and try to answer several questions:

- What is the average price per month and availability per month? (for the year 2016)
- What are the biggest factors driving the price? (ex amenities)
- What amenities drive the review score? What should be available, what can easily be added to provide value?

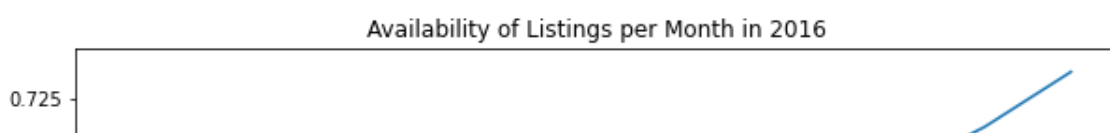
## Price and Availability of Seattle's Airbnb Listings

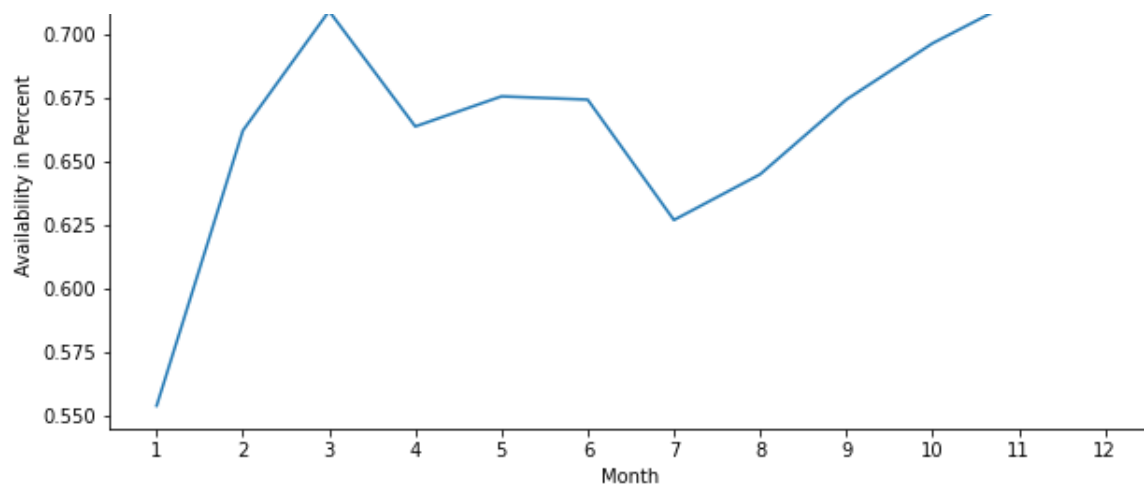
The data was provided by Airbnb inside which gathers the Airbnb data that is publicly available. I will use two datasets to answer those questions. The first one provides prices and availabilities of the Seattle listings and has 1.4 million data points. The second one includes all the specifics of each listing, of 3818 listings in total.



Average Price of Available Listings per Month in 2016

The Seattle Airbnb data for 2016 shows that it is most expensive to get an Airbnb in July (\$155). This is not surprising. The demand during the summer (good weather conditions, holiday season) should be higher than during the rest of the year. Prices are quite low at the beginning of the year (around \$120) and in November (around \$135). There is a little increase again in December (probably due to the Christmas time and increased travel activities again).





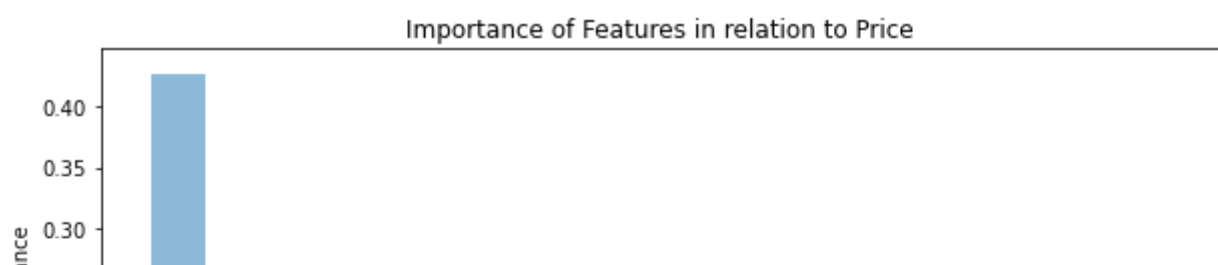
Availability of Listings per Month in 2016

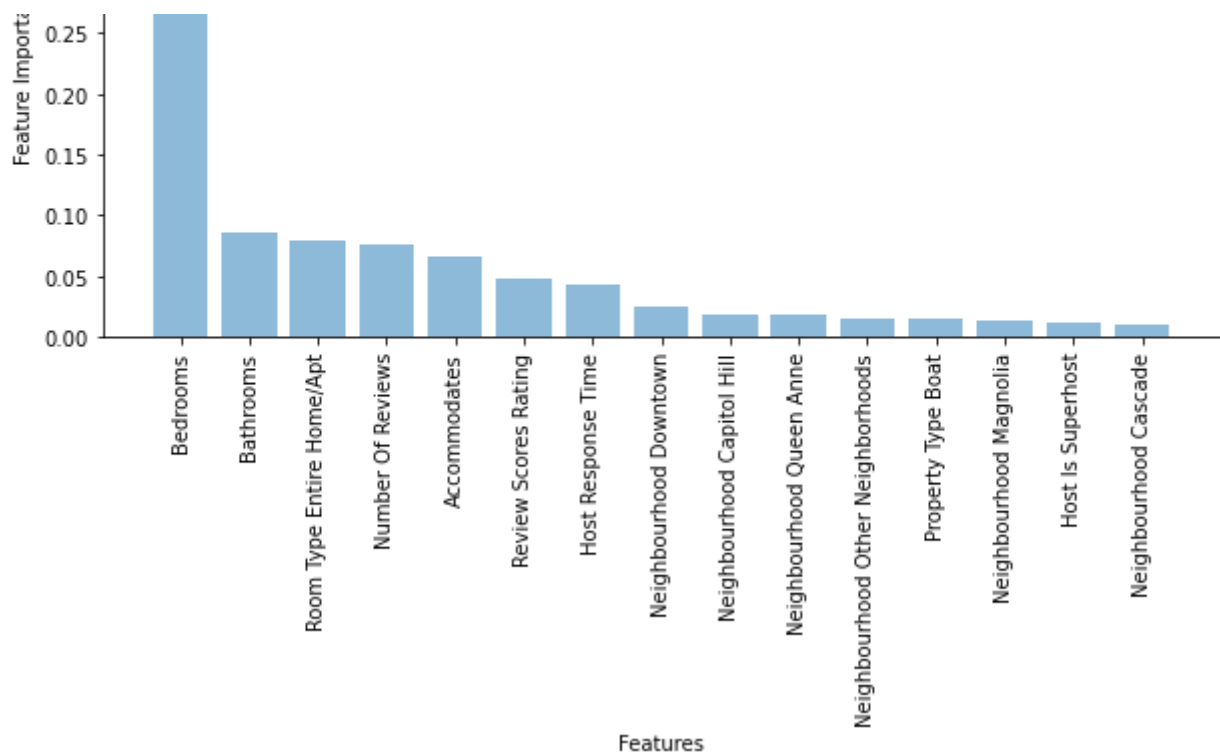
The earliest date of the dataset was January 4, 2016. The provided data was gathered around this date or just before this date. This has to be taken into account when interpreting the results. This has implications especially for the results of the Availability of the Listing per Month. It is at its lowest in January at around 55%. This is understandable. All visitors who book on short notice cause a higher occupancy rate compared to the same listings a year from that point in time, for example. The local peak in March, around 71%, suggests that the effect of those short-term bookings is not that prevalent yet. As with the price, availability in July is quite low at around 62%. This is also understandable since the visitors want to lock in the place for the stay well in advance during high season.

## Features that Particularly Explain a Listing's Price

The second question is about the impact of features on the price. The dataset needed to be cleaned because it included a lot of useless or just redundant information. After cleaning it, 43 features will be taken into account. For example, a feature could be the number of bedrooms, the type of the listing, or the listing's neighborhood.

I used the Random Forest Regressor for this task. After training the model, it did a good job explaining the price based on its input variables (using R-squared as the metric here and below). Unfortunately, it did not generalize too well. We might deal with overfitting here and this needs further investigation.



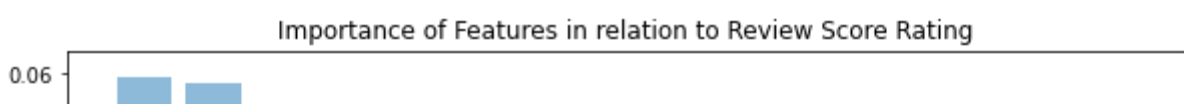


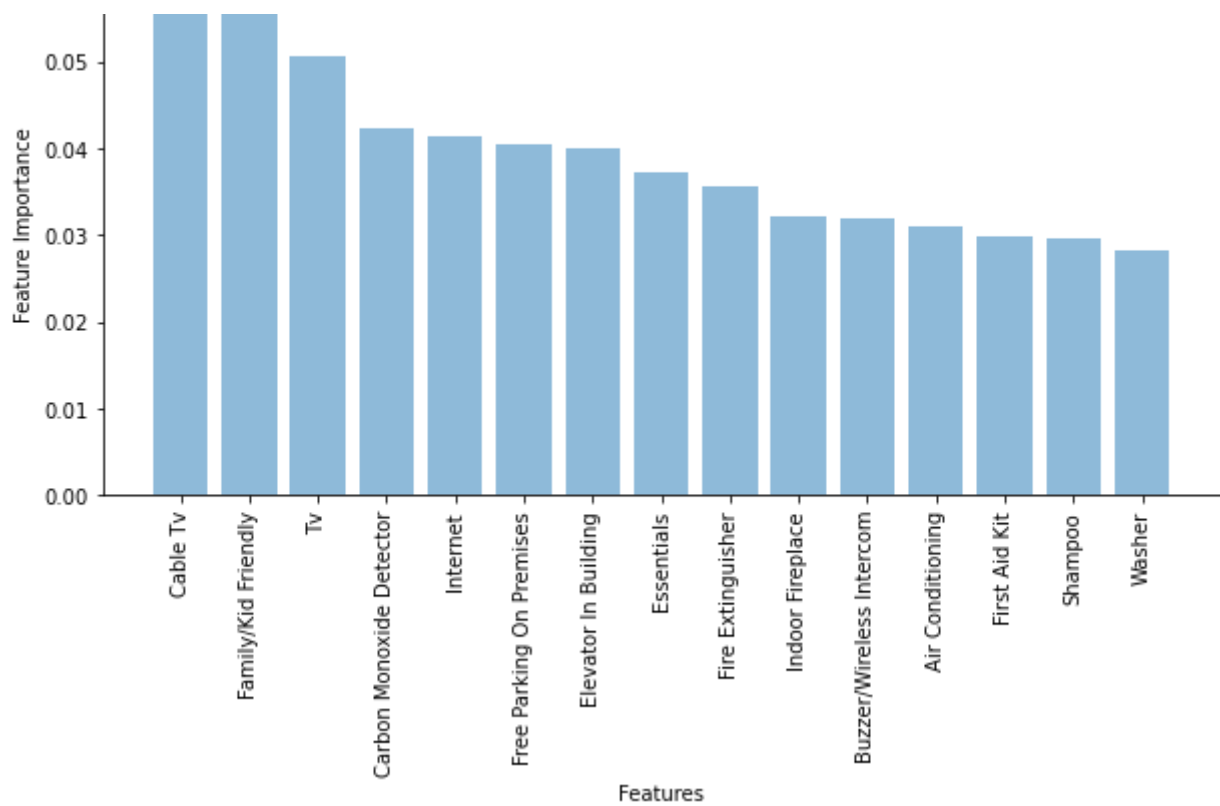
Importance of Features in relation to Price

Nevertheless, the retrieval of the importance of the features provides interesting insights. The by far most important feature that explains the price of a listing is the number of bedrooms (42.3%). This is followed by the number of bathrooms (8.7%), the type Entire Home/Apt (7.9%), and the number of reviews for a listing (7.7%). There is certainly a correlation between the number of bedrooms, the number of bathrooms, and the type of the listing being Entire Home/Apt. The number of reviews certainly indicates that the pricey listings get booked more often and/or as they are well in demand the price might be adjusted accordingly. What you can also see, even though the impact is not really significant (2.5% and less), that the neighborhoods have also an impact on the price. Downtown, for example, has the highest impact of all the neighborhoods. The reason could be that it can be considered the city center which offers short distances to many Seattle sights.

## Amenities a Host Should Provide if Possible

The third and last question deals with the amenities and the review scores rating. I try to find out if there are certain amenities that have an impact on the review and that can easily be added to provide value if missing so far (e.g. a first aid kit can certainly be provided easily whereas it would be much more difficult if not impossible to add an indoor fireplace in a regular apartment).





Importance of Features in relation to Review Score Rating

The Random Forest Regressor is also used here. The trained model does a reasonably good job of explaining the influence of the amenities on the review score rating. But it does not generalize at all. The results should probably be dismissed. Perhaps using a different algorithm might lead to better and more significant results.

Nevertheless, when looking into the importance of the features, you can possibly still draw a few conclusions (even though you should treat them carefully). Overall, there is not a feature dominating as much as was the case with the number of bedrooms of question two. The most important feature is Cable TV (6.0%), followed by Family/Kid Friendly (5.9%) and TV (5.1%).

When looking at features with 3.0% and more, the following might be able to provide value and should be added to the listing if possible: TV, Cable TV, Essentials, Fire Extinguisher, Internet, First Aid Kid, Carbon Monoxide Detector, and Shampoo.

The following features might not as easily be added or not all (all above 3%): Family/Kid Friendly, Free Parking on Premises, Elevator in Building, Indoor Fireplace, Buzzer/Wireless Intercom, and Gym. Here, you should just focus on the ones stated above and try to add those to provide value and that potentially increase your review score instead of adding this Indoor Fireplace for example.

## Conclusion

Looking into this data and answering those questions provided a good starting point in analyzing Seattle's Airbnb data. It can definitely be said that seasonality impacts the price and the availability. The analysis also shows that the price of a listing could be explained reasonably well by certain features, with the number of bedrooms being the most important. Also, even though the model couldn't explain it that well, it could be beneficial for Airbnb hosts to provide certain amenities that can easily be added to provide more value which in turn might increase their review score rating.

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