***Project Name***: AirBnB Data Report

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## **Business Space**

Our project will be in the property leasing space focused around Seattle and will operate on data made available by AirBNB. Because our data is static, we cannot use it to help users infer a decision on time sensitive actions since we don’t have real time information. Instead, our project will focus around using data science to make a pricing recommender engine for people renting out properties.

Current recommenders on the market either require some upfront payment to use, or aren’t transparent in how prices are calculated. Given Seattle’s quickly growing housing market and more people than ever renting out properties; we wanted to build a solution that could be used for people to make pricing decisions through an informed manner.

When complete, the application will receive property information (location, size, amenities, etc.), and uses machine learning (KNN) to suggest property renters a price using similar property information around them as found in historical data.

## **Typical Users**

The Listers - It is important for listers to know how much their competition is offering. This is because the lister can decide to upsell past other AirBnB listers, their chances of finding someone renting the location will be lower. However, they can also use this information to see what their competition is charging and charge a similar price (or even go slightly under as long as they are making the profit they want). On top of charging similar prices, listers can also verify whether their prices are valid for what they are offering. For instance, if a fellow lister is pricing a 3 bedroom house rental for $300 per day, another lister who is also offering a 3 bedroom house rental, but is closer to the city the renter wants to go to, can charge a slightly higher price due to convenience. Using the amenities listed, we can generate a reasonable pricing range that fits within the scope of all the other prices in the area.

The Users - As the people who rent from the listers, they want to know what is a fair price for the listing they are interested in. Using the recommendation engine, we can simply find the price range the users are willing to pay for and from there generate relevant listings. People can look for specific amenities as well to find the right listing.

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## **Decisions**

Using our recommender tool, homeowners will be able to make decisions on how to set the price for the homes they’re renting out. By inputting information about their homes, such as size of property, number of rooms, types of amenities, etc, the homeowner will get a recommended price for their listing. This price would be calculated based on how other houses with similar features are priced, as well as how other houses in the neighborhood are priced. With our recommended price, the homeowner could adjust their prices accordingly and stay competitive in their neighborhood.

Similarly, users that are looking to rent homes from Airbnb could also use our tool to see if the houses they want to rent are priced fairly. By inputting information about their house of interest, they could acquire our recommended price and compare that to the homeowner’s price to see if they are getting a fair deal by renting from that house.

**Anticipated Volume of Transactions**

Our goal is to make a price recommendation tool for Airbnb users and renters, which would require as many transactions as there are listings on the Airbnb website and from our data. However, we are focusing on users located only in the seattle area so we will only be looking at data for the Seattle area, and data from the site for users located only in Seattle, so it will be a smaller fraction of the total AirBnb user base. People renting out their homes can use our recommendation engine to see what other similarly located homes are being being rented out and at what price, taking into account amenities offered, the neighborhood, as well as surrounding neighborhood properties, reviews, etc. This means that we need to provide this information quickly to make it a feasible tool for end users to actually use and find useful. We need to be able to handle several transactions going on per second so that multiple users can get their recommendations out in quick succession. The amount of transactions we make will be as many are on the airbnb dataset and website since we will be targeting both renters and people who rent out their homes, which then can use our information to make an informed decision on what houses to rent, whether they are priced fairly, what prices for renters to rent their home out for, and what pricing is in other areas.

**Business Rule**

One business rule we need to implement is that other users besides those in our group should not be able to insert, update, or delete any data inside our database. Since this is a static database meant for the purpose of analyzing data, there really is no reason for anyone else to be accessing or using the database so it’s important that we maintain the database’s integrity by disallowing anyone else to modify the database through any methods. Another business rule is that we will be looking at, taking in, and analyzing data for only seattle based users, since we are only focusing on that subset of users at the moment. This means we have to make sure our data is from a location based in Seattle and that we are not using data not relevant to this location in making recommendations or affecting results we get because we analyzed irrelevant information.