**Price prediction model for a specific Airbnb in Vienna (Austria)**

**Introduction**

A company who operates small and mid-sized apartments (usually hosting 2-6 guests) asked us to help them setting their prices for new apartments in Vienna, Austria. As there are currently many hosts in the city, the data from Inside Airbnb[[1]](#footnote-1) may contain false information, thus a thorough cleaning may be necessary to get a usable data frame to work with. Next, multiple models are used to determine which one may predict the actual worth of the company’s apartments the best, based on multiple prediction fit factors (such as RMSE).

**Data & Cleaning**

The dataset itself could be cleaner, many modifications had to be done. The most important one, is that many listings, weren’t even in the country. Only Austria **“Vienna” and “Wien”** host locations used. The dataset further filtered to only include **2 to 6 accommodates**, based on the company’s request and **Hotel rooms were excluded**. Many types of properties remained, thus more filtering was needed and now it includes **just apartment-like properties** (Rental Units / Condos).

**Usable Models**

Three models are used to predict the apartments’ worth in the field:

1. Linear OLS Regression
2. Random Forest
3. LASSO

The reasons of the usage of the said models are the following:

**A.: Linear OLS Regression**

The OLS Regression let’s us to choose the variables from the dataset ourselves. While **it needs some tuning**, by choosing which variables will be used for each (4) formulas in the regression, the coding of **the model is relatively easy using stargazer**, thus it gives out a simple result and a head start on choosing the right model.

**B.: Random Forest**

Random Forest needs relatively less tuning than for the other prediction models, while more coding is needed in python, due its “Black Box Model” attribute. For this reason, programming the importance and partial dependence plots are also needed.

**C.: LASSO**

**Models’ Results**

1. <http://insideairbnb.com/get-the-data/#:~:text=Vienna%2C%20Vienna%2C%20Austria> [↑](#footnote-ref-1)