

A modern living room interior featuring a white fireplace, a grey sofa, a coffee table, and a floor lamp. The room is decorated with plants, a patterned rug, and a large abstract painting. A red banner with white text is overlaid across the center of the image.

London Airbnb Pricing Model

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Goals

- **Build** a model to predict price of London Airbnb properties
- **Recommend** strategies to Airbnb hosts

What are the main features that affect price, overall rating and Superhost status?



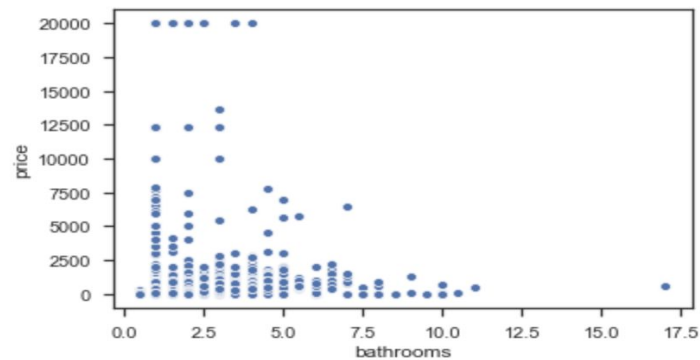
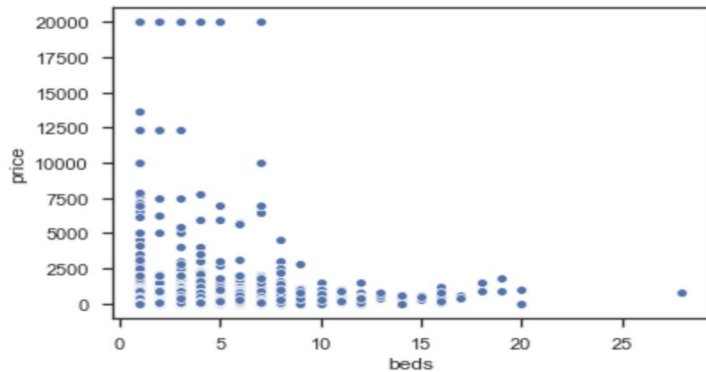
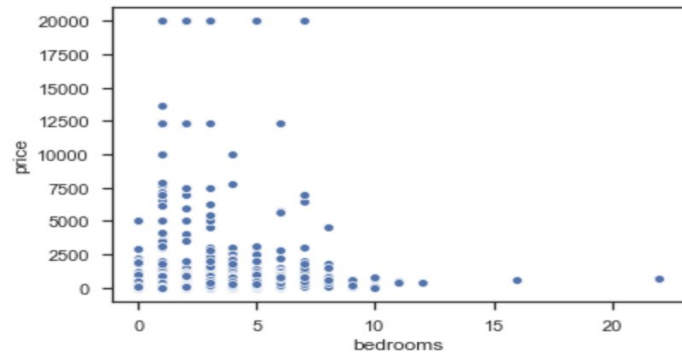
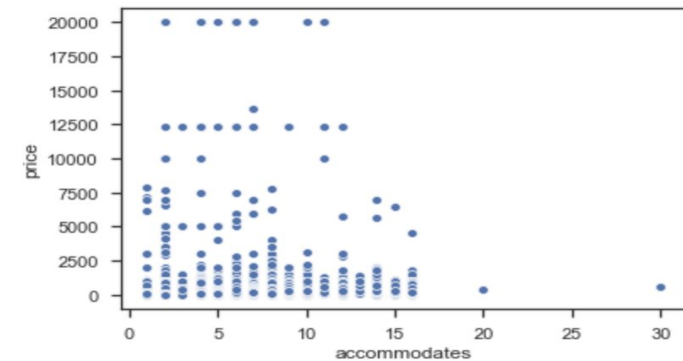
Data

- Source: <http://insideairbnb.com>
- London Airbnb listings as of September 2019
- 85,273 listings: entire homes/apartments, private rooms, hotel rooms, shared rooms

Inside Airbnb
Adding data to the debate

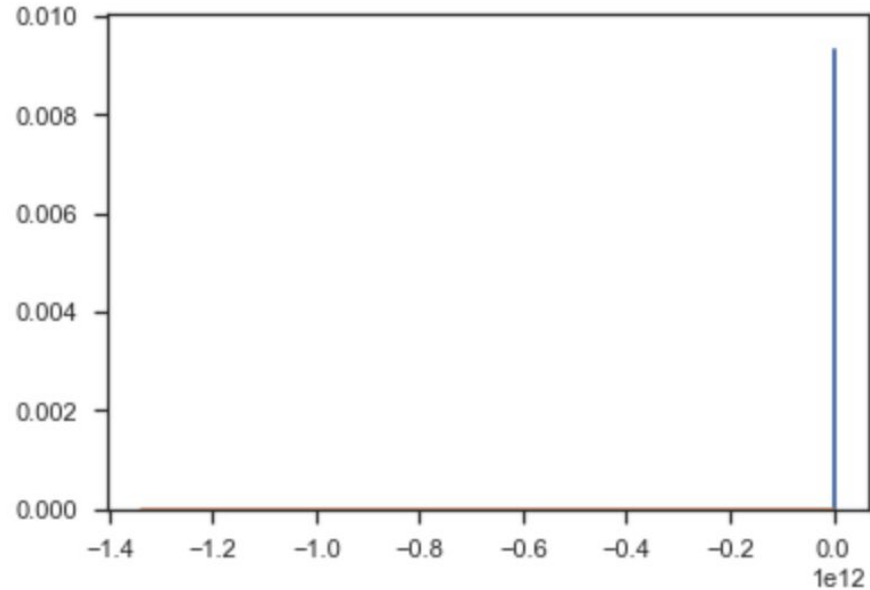


Data



Linear Regression

- 121 variables
- Negative R^2



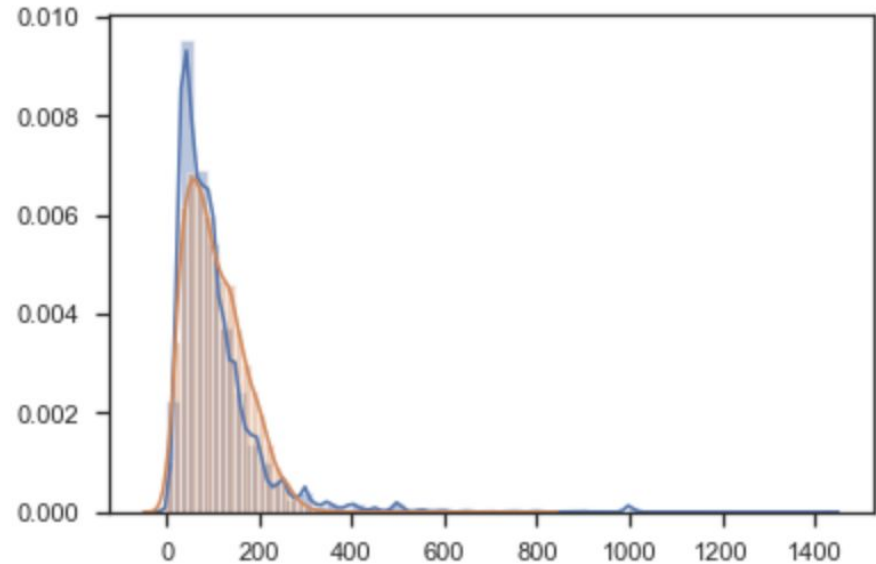
Testing dataset: price vs predicted price

`{'training_r^2': 0.39, 'mse_train': 5843, 'testing_r^2': -2.83e+16, 'mse_test': 2.67e+20}`



Ridge Regression

- 121 variables
- $R^2 = 40\%$ at $\alpha = 0.20$

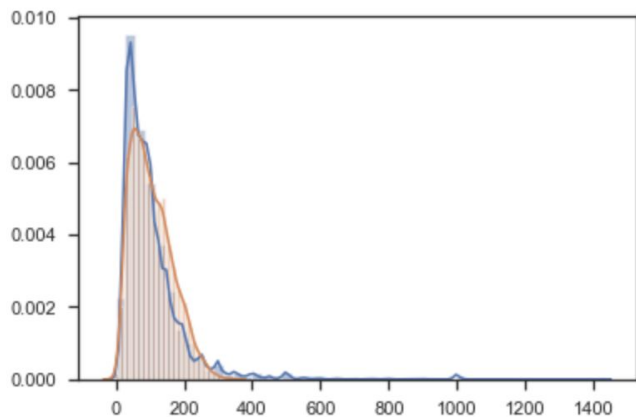


Testing dataset: price vs predicted price

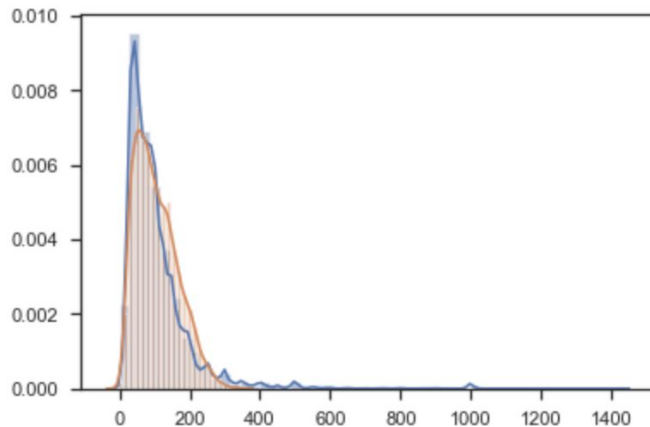
{'alpha': 0.20, 'training_r^2': 0.40, 'mse_train': 5843, 'testing_r^2': 0.40, 'mse_test': 5637}

LASSO Regression

- $\alpha = \sim 0$: 121 variables, $R^2 = 40\%$
- **$\alpha = 0.20$: 50 variables, $R^2 = 38\%$**



Testing dataset: price vs predicted price
 $\alpha = \sim 0$




Testing dataset: price vs predicted price
 $\alpha = 0.20$

{'alpha': 0.0, 'training_r^2': 0.40, 'mse_train': 5843, 'testing_r^2': 0.40, 'mse_test': 5634
{'alpha': 0.20, 'training_r^2': 0.38, 'mse_train': 6000, 'testing_r^2': 0.38, 'mse_test': 5867}

Recommendations

- **Price:** increase capacity and number of beds and amenities offered
- **Rating:**
 - encourage guests to write *good* reviews
 - maintain cleanliness and improve accuracy, responsiveness, check-in process
- **Superhost status:** improve overall rating and increase number of amenities offered



A modern living room interior featuring a grey sectional sofa and a matching armchair. In the center is a dark wood coffee table with a book and glasses on it. Behind the sofa is a white fireplace mantel with a large abstract painting above it. To the right, a tall floor lamp with three glass globe shades stands next to a large potted plant. The room is decorated with various plants, a patterned rug, and hexagonal mirrors on the wall. The text "Thank you! Questions?" is overlaid in the center.

Thank you!
Questions?