

airbnb Toronto



airbnb

Agenda



Introduction



Data Description & Cleaning/Wrangling



Analysis Methodology

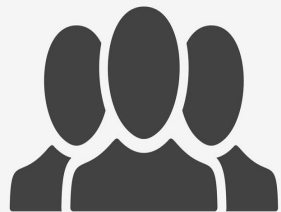


Results & Recommendations



Summary

Executive Summary



About us:

Top housing platforms
offering alternative and
less expensive vacation
rentals

Focus: Toronto, ON

Opportunity:

Identify which attributes
most impact price and review
scores



Stakeholders:

External: Hosts, renters
Internal: Marketing, Data
engineers, Programmers

Target:

2% 

Commissions

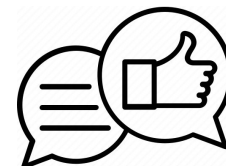


Plan to increase Price:

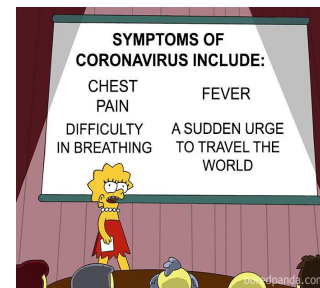
1. Offer review incentives
2. Recommended price adjustments

Plan to improve Reviews:

1. Audit listing accuracy
where score is below 3



Introduction



2008

2019

2020

2022 +

Established

Online housing platform offering cheaper vacation rental alternatives for travellers compared to more expensive hotel accommodations

Impact of Global Pandemic

Travel restrictions have little impact on airbnb sustainable business model

Company goes Public

Business thriving, airbnb becomes a public entity

Opportunity to Increase Sales

As post COVID economies in various sectors regain foothold, belief that demand for travel will flourish

To maximize potential revenue, airbnb hosts can make use of attributes that drive booking price and improve these features for the benefit of travellers

Goal: Increasing revenue by 2% through increasing commissions for airbnb

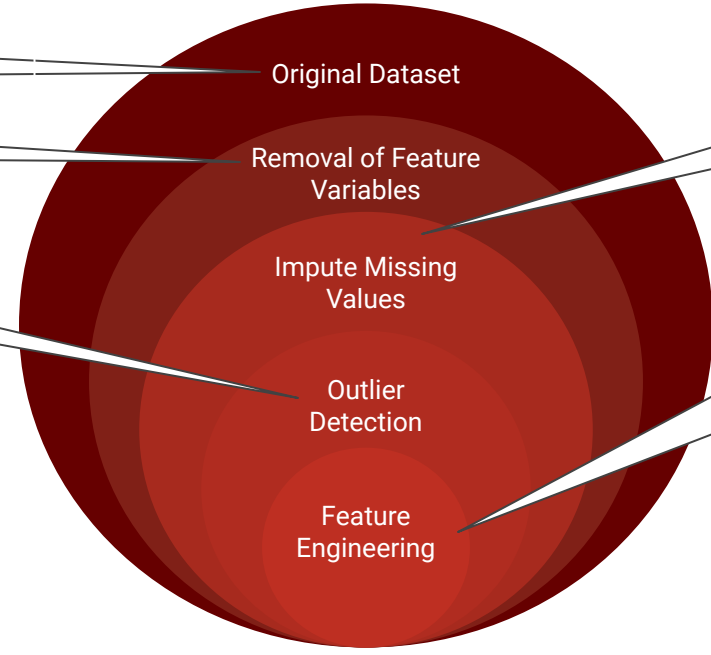
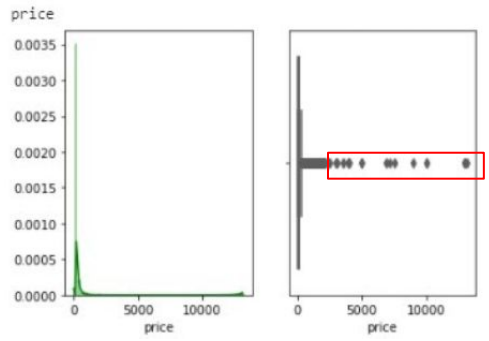


Data Description Cleaning & Wrangling

74 variables and 19,343 total records located in Toronto, ON only

- Irrelevant data, i.e. listing_url
- Missing 40% or more of values

Interquartile range (IQR) method applied for detecting and removing outliers (fig. below)



SimpleImputer (Categorical) and IterativeImputer (numerical) from Sklearn Python used to impute missing values

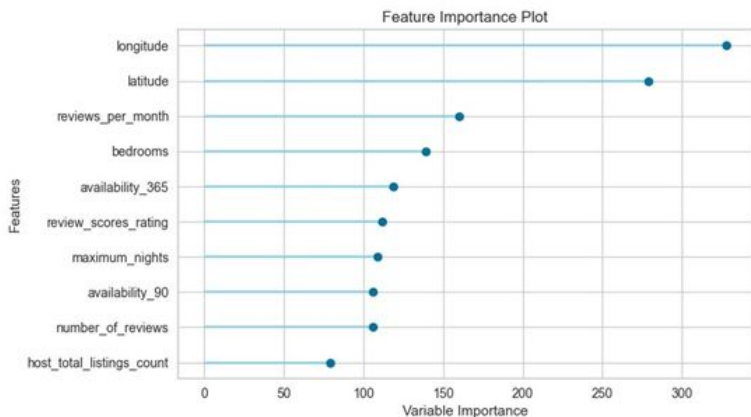
- Host Since
- Host Response
- Host Acceptance
- Former City - grouped 70+ neighbourhoods into 6 cities (fig. below)



Analysis Methodology - Price Model



1 Feature Variables

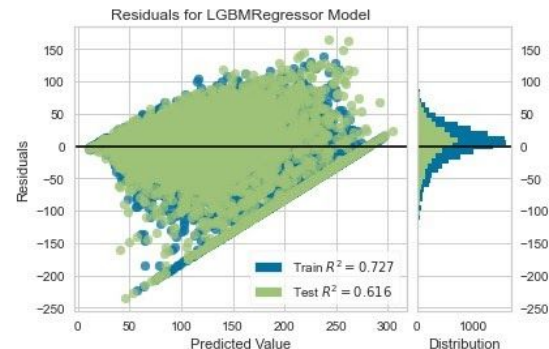


2 Algorithm/Model

- Test/train split (70/30)
- 10 folds for validation
- Light Gradient Boosting Machine
- RMSE as chosen metric

3 Model Evaluation

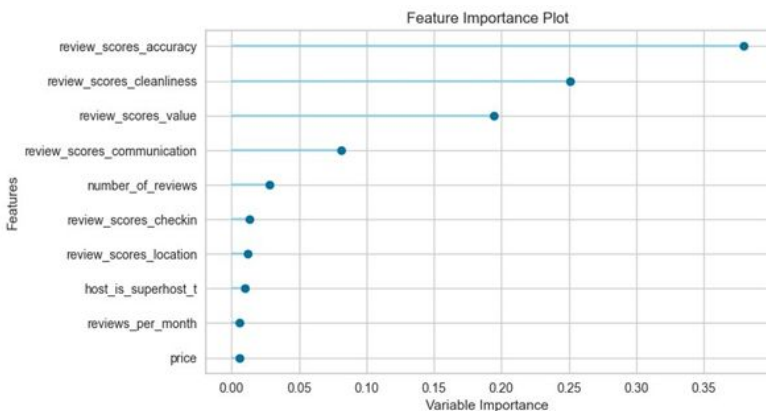
- Overlap of test and training set residuals consistent
- No significant overfitting in the training set



Analysis Methodology - Reviews Score Ratings Model



1 Feature Variables

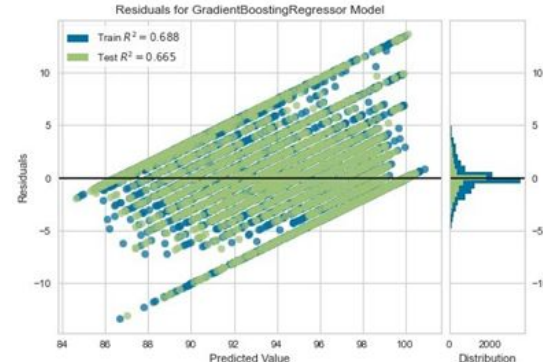


2 Algorithm/Model

- Test/train split (70/30)
- 10 folds for validation
- Gradient Boosting Regressor
- R-squared as chosen metric

3 Model Evaluation

- Overlap of test and training set residuals consistent
- No significant overfitting in the training set



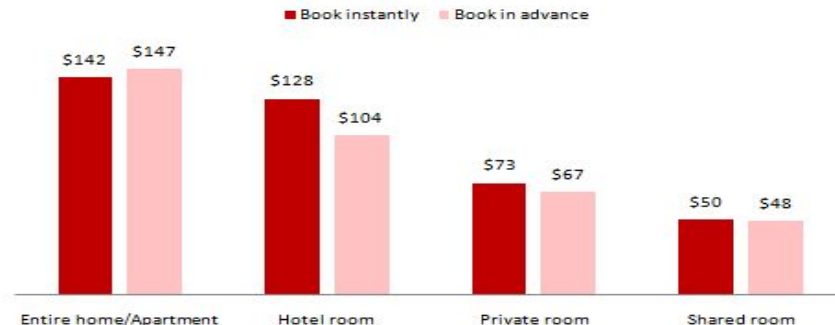
Results & Recommendations: Price



Average price per night vs. Number of reviews



Ability to book instantly vs. Avg. price per night

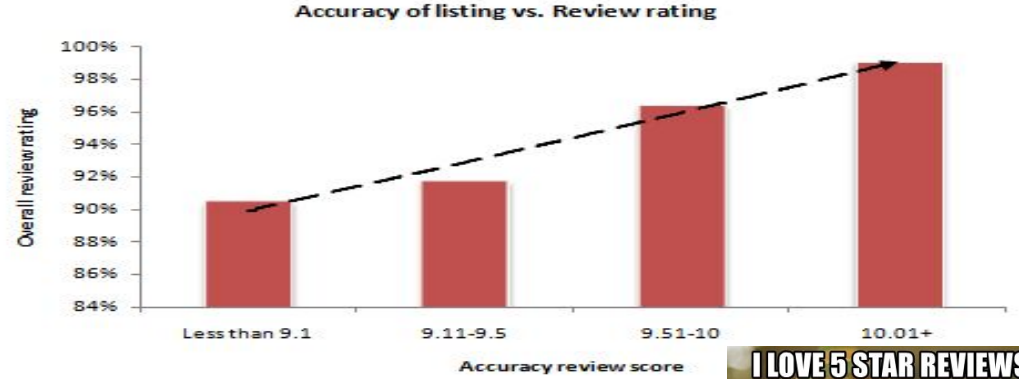


1. Offer **incentives to renters** to leave reviews
2. Create an algorithm which provides the host with **guidance of adjusting the price based on the booking window**
3. Create an algorithm which generates guidance for hosts to identify if their set **price per night is within a standard/high/low range**



Results & Recommendations: Review Score

Implement internal **audit/review** process when **accuracy score is low**, requiring corrective action from the host



★ 5.0 · 25 reviews

Cleanliness

5.0

Accuracy

5.0

Communication

5.0

Location

5.0

Check-in

5.0

Value

5.0



Summary



Increase Price & Improved Review Scores = Added Commissions

Begin offering incentives for renters to leave reviews

Create algorithmic recommendations to hosts for price adjustments based on booking window and standard price for similar properties

Implement internal audit and review process when listing accuracy scores low

Top Features



Location



Number of reviews

2%



Commissions



Instant booking



Listing accuracy

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Recommendations

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