Airbnb Sprint 2

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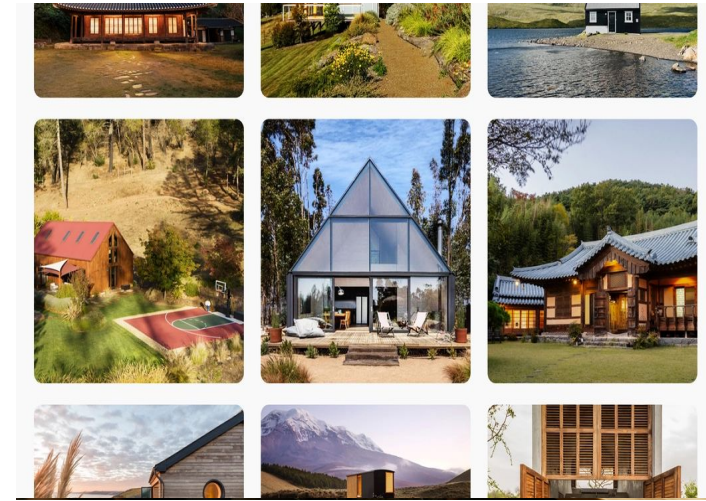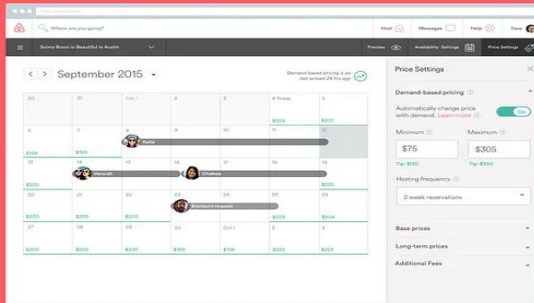
PROBLEM

Pricing can be tricky. Hosts may not know the best price for their property, they can under-price and lose out on revenue, or over-price and lose out on bookings. There are dynamic pricing tools, but they tend to take a black-box approach, and hosts usually do not know how the pricing is calculated.

OPPORTUNITY

Airbnb is a major homestay booking service. In 2024*, there were an estimated 490 million bookings of nights and experiences, giving Airbnb an estimated 83 billion market capitalization, and generating about 11 billion dollar revenue in 2024. Airbnb has listings worldwide, with over 5 million hosts, listing an estimated 7.7 million listings. There is an opportunity to help with better pricing, more transparency, and better customization.

* Source: Statistica

IMPACT

More transparency and control for hosts, allowing them more competitive rates and increased revenue.

Fairer prices for renters, allowing them more freedom of travel.

Better pricing efficiencies and satisfaction for Airbnb.

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PREPROCESSING

BEDROOMS & BATHS COLUMNS

String values cleaned and unspecified
values filled in

NEIGHBOURHOOD COLUMN

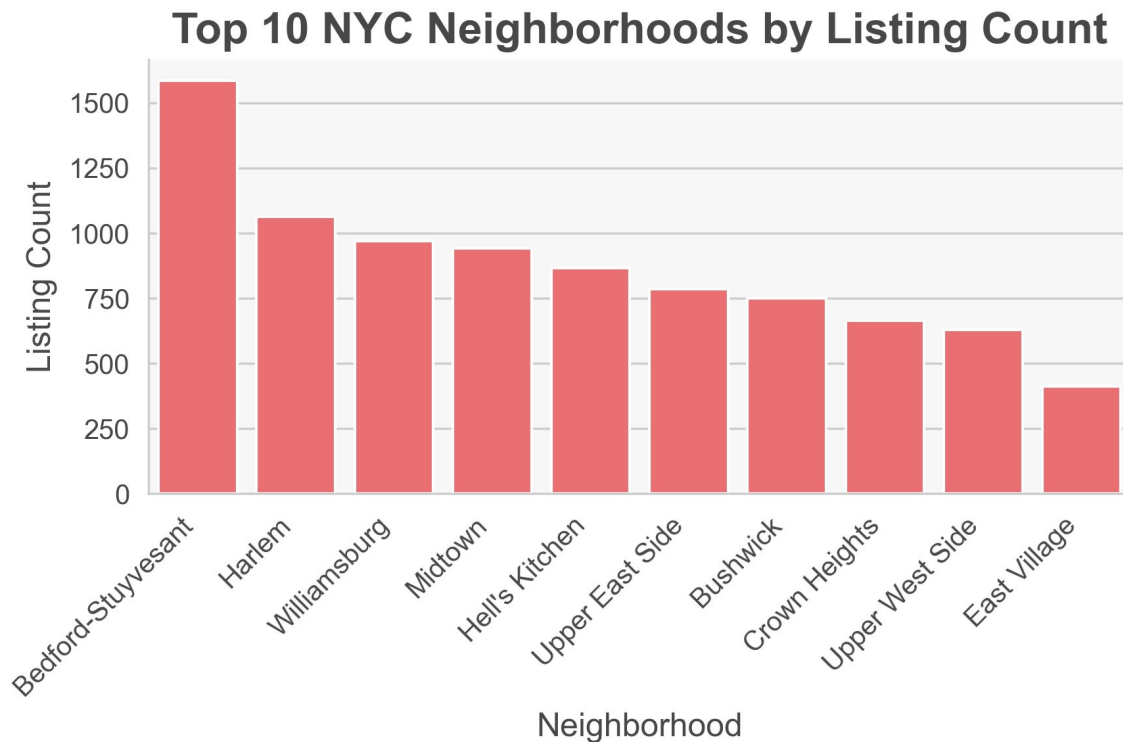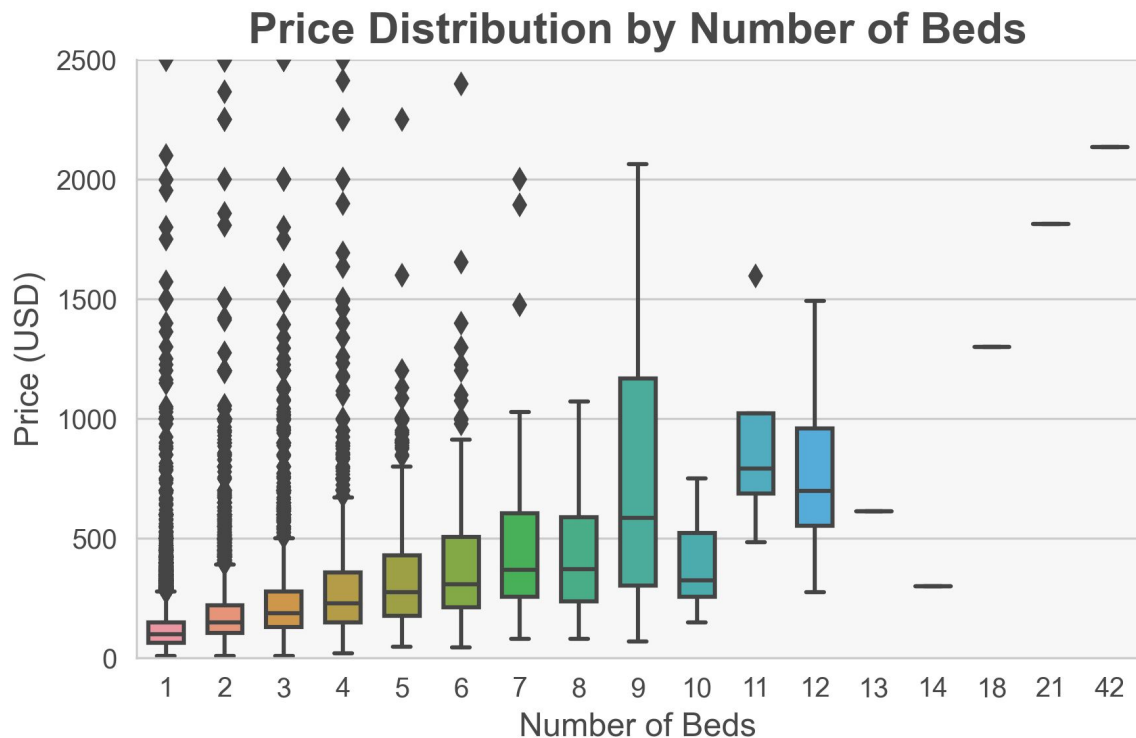Neighbourhood mean price imputed

RATING COLUMN
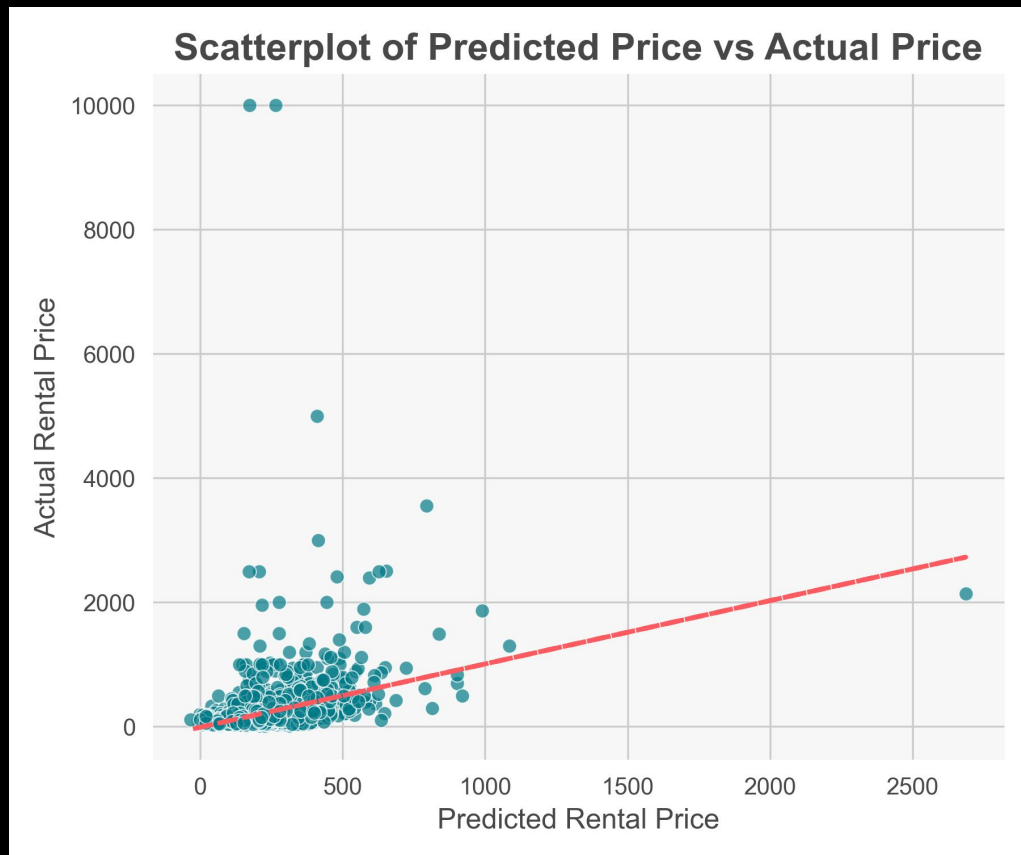
Rating binned and OneHotEncoded

Top 10 Neighborhoods

Top 10 NYC Neighborhoods by Listing Count

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Prices are more predictable for listings with less beds

Price Distribution by Number of Beds

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Predicted prices miss outliers

➔ Actual rental prices has extreme outliers
➔ Outliers heavily punish linear regression model

Better price predictions for listings under $1000

➔ Max axis values of 1000 show improved predictions

➔ Dense area under line for values less than 400, show under-prediction

Scatterplot of Predicted Price vs Actual Price
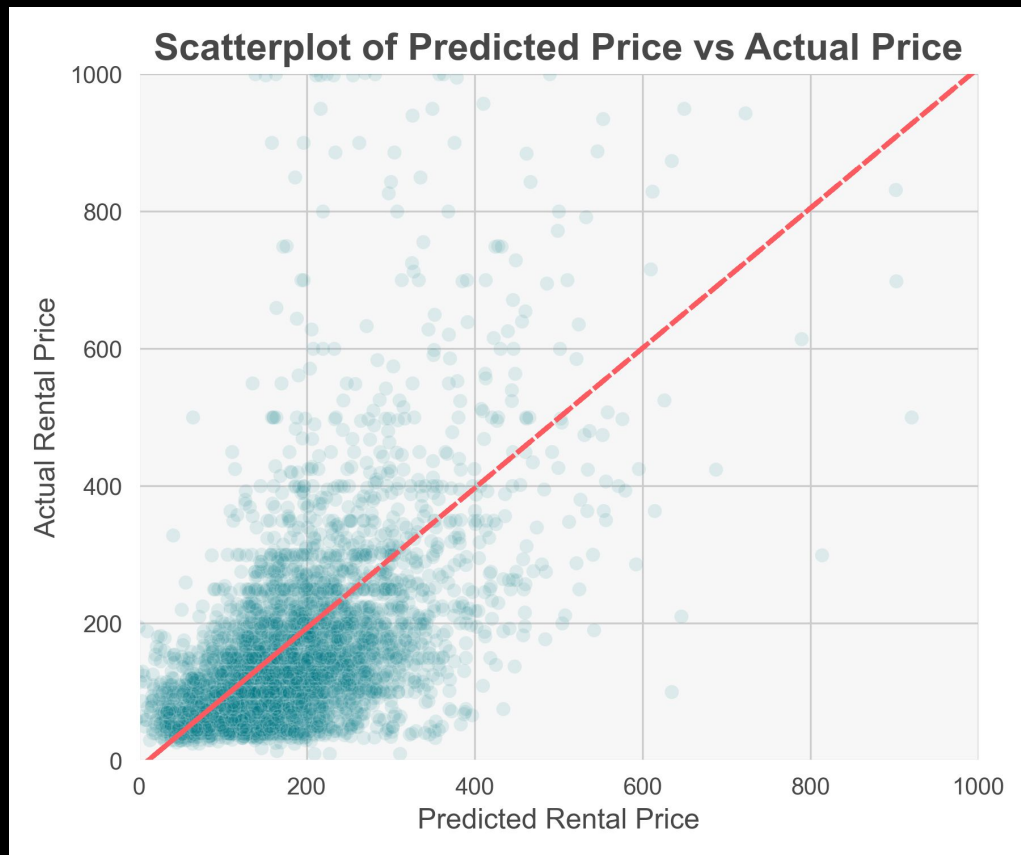
Next steps

➔ Tune features to improve model performance
➔ Consider limiting model to listings with less extreme outliers, such as maximum rental price and bedrooms
➔ Build application tool to take in user input

Thank you

https://github.com/tam3ourine/Capstone_Airbnb/tree/main