King County House Sales

Exploratory Data Analysis and Linear Regression Modeling

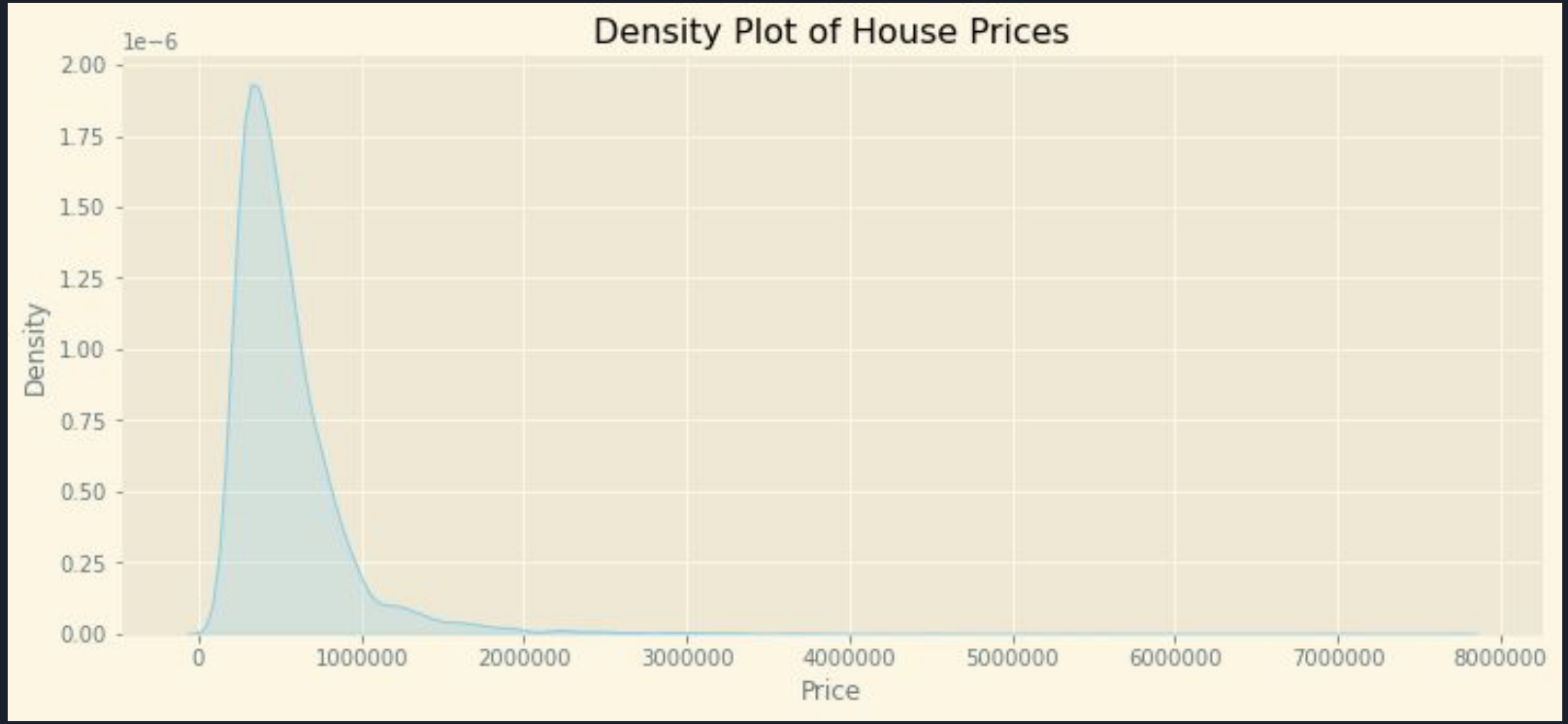
The Data: House sales in King County

- 20 Features, e.g. Size Measures, Quality and Condition and Neighborhood
- 1 Target: The Price the house was sold at
- 21597 Observations over one Year, from May 2014 to May of 2015

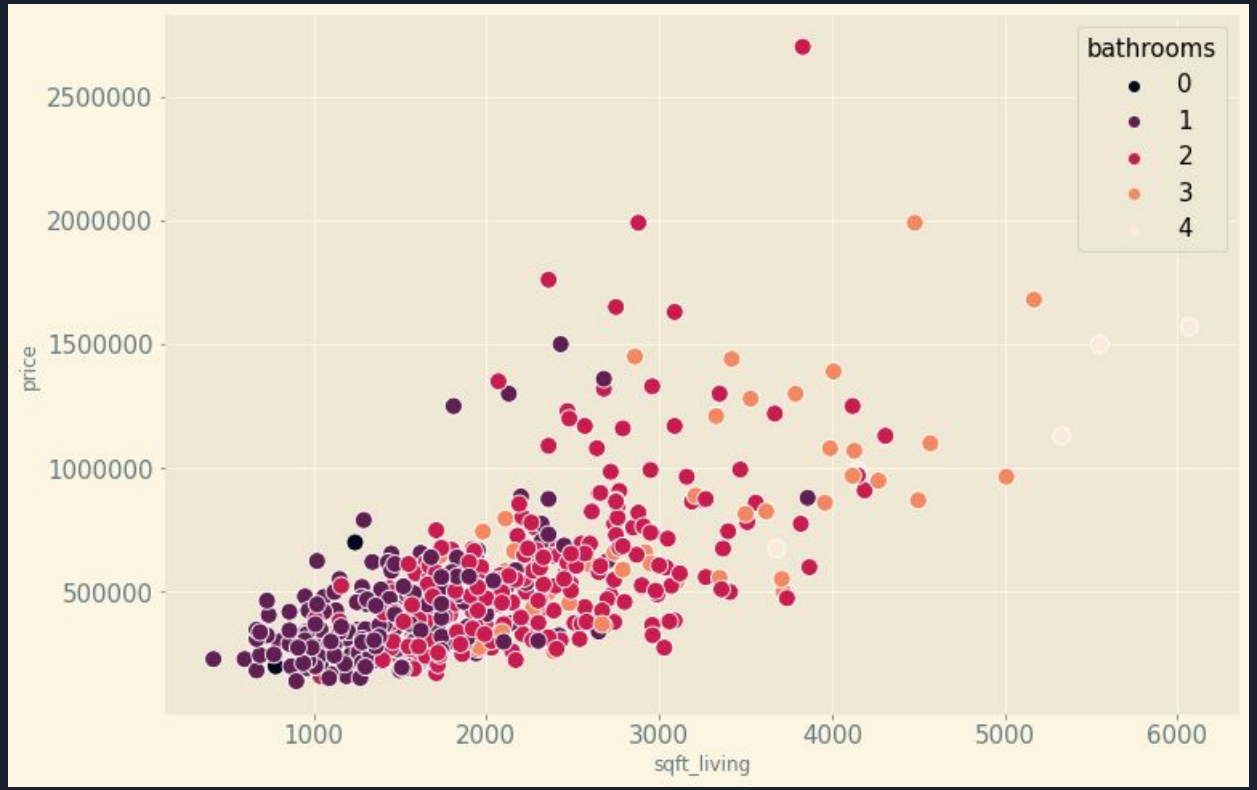
Cleaning and Exploration of Data

- Check Dataset, fix missing values and get formatting right
- Descriptive Stats and Visualizations
- Find the strongest Correlations of Predictors with target to form a preliminary hypothesis

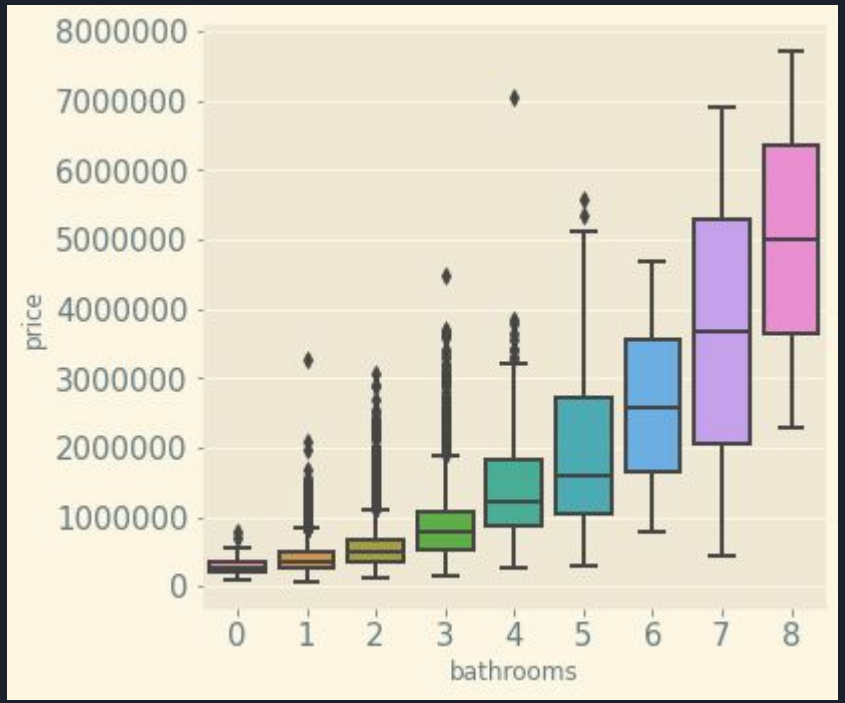
The Prices

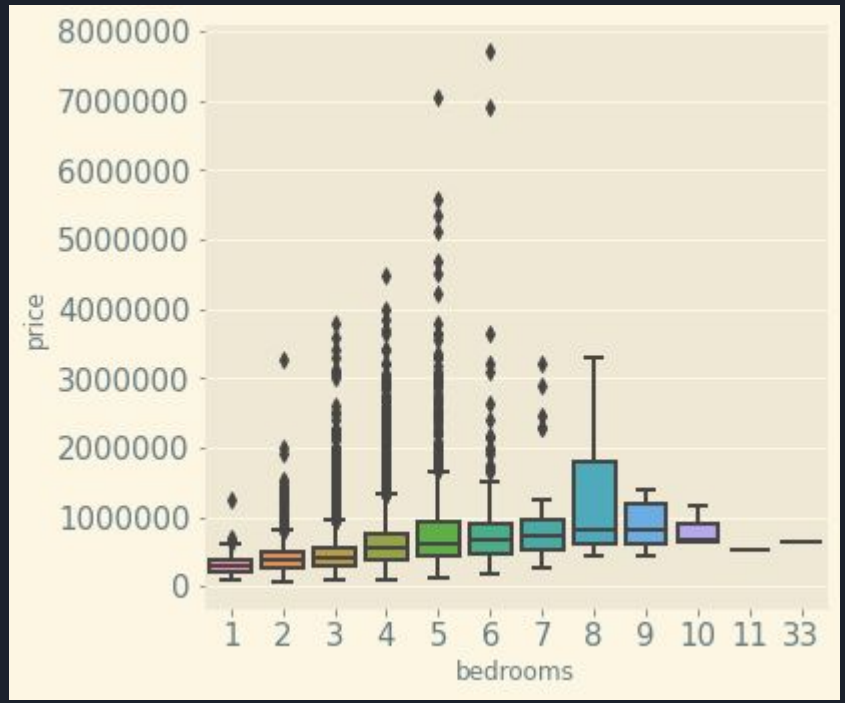

Density Plot of House Prices
1e−6
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Density
0
1000000
2000000
3000000
4000000
5000000
6000000
7000000
8000000
Price

The most promising Predictors
Area of Living and Number of Bathrooms

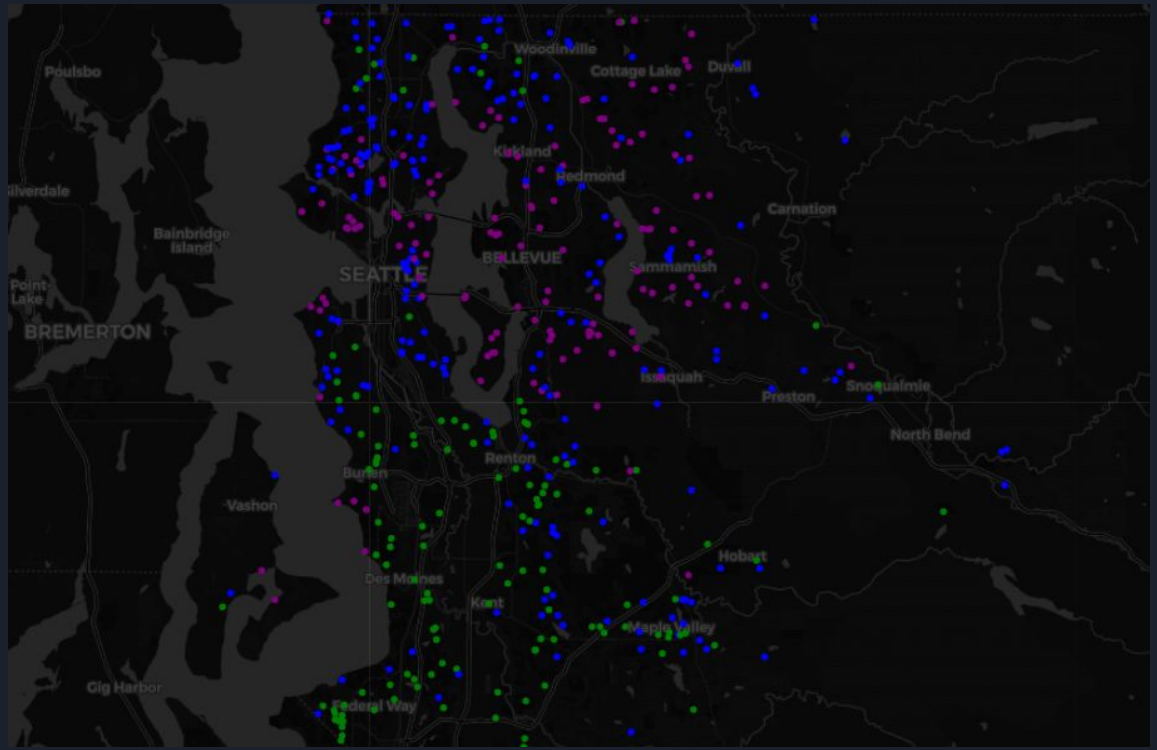


The most promising Predictors
Number of Bathrooms and Bedrooms



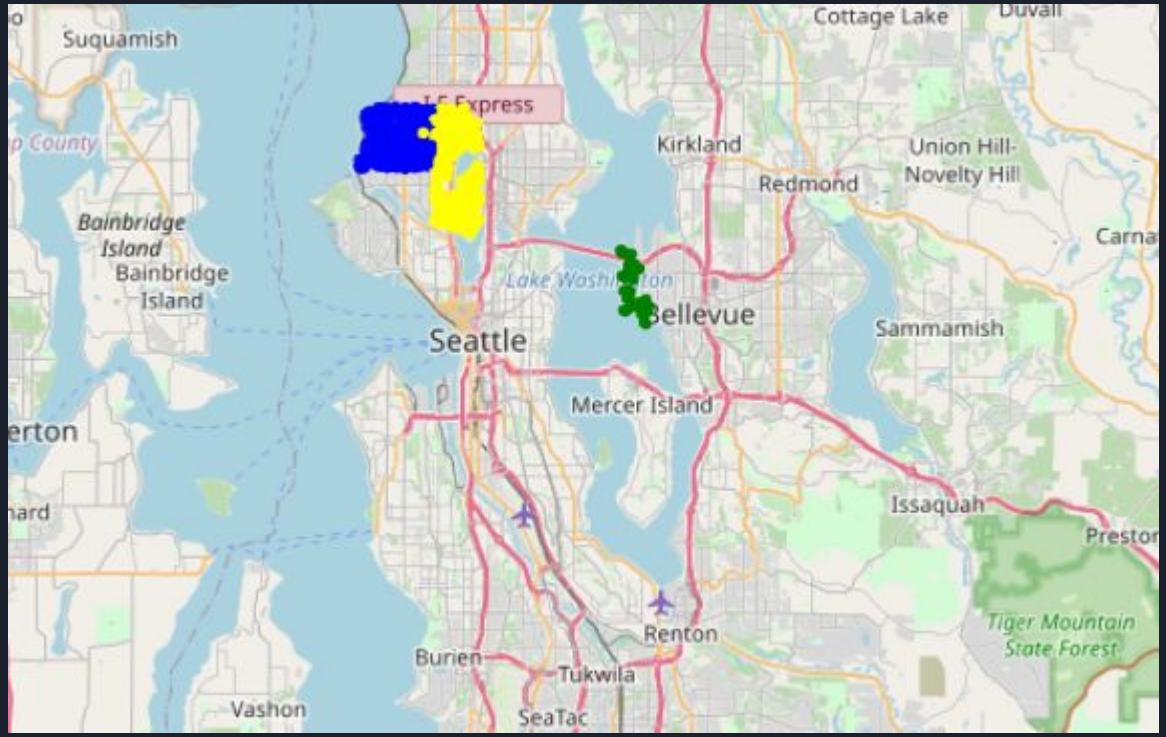


The most promising Predictors Neighborhood

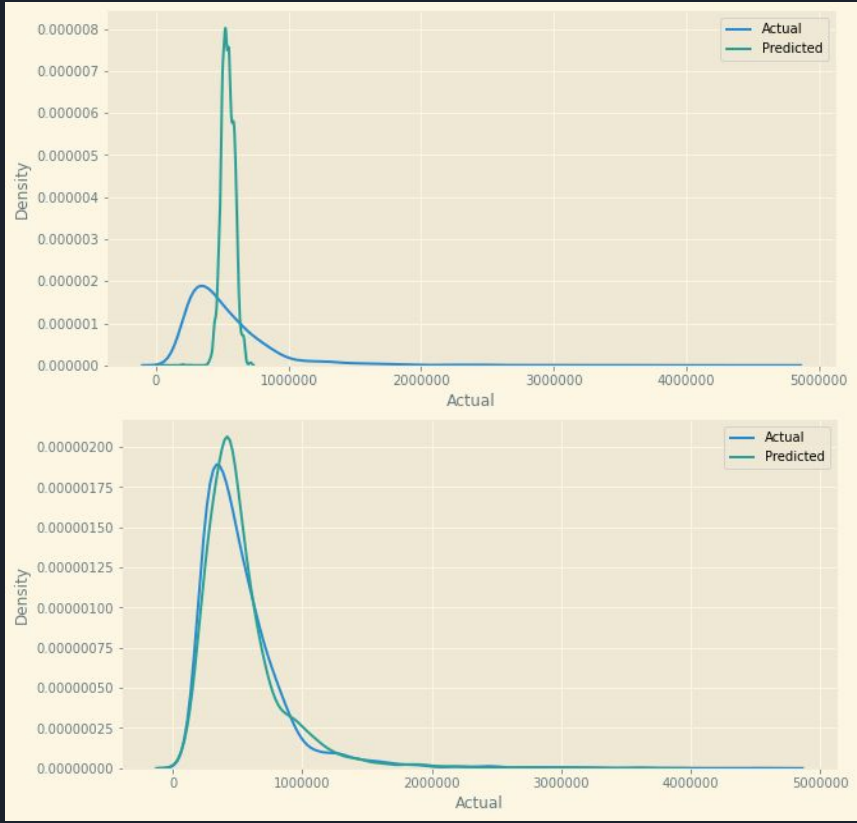


The most promising Predictors
Zip Codes

The most promising Predictors
Zip Codes with highest and lowest turnover



Predicting the Price
Results with weakest vs strongest Predictors



Recap and Findings

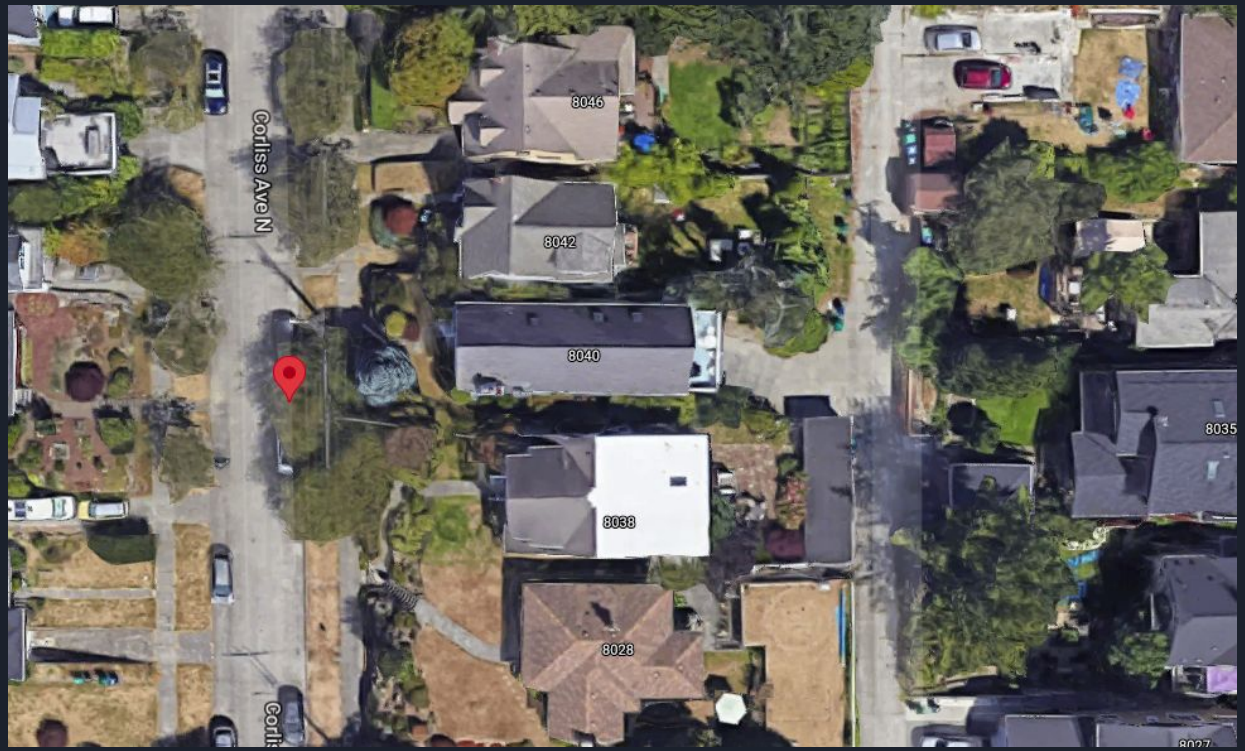
A dataset of house sales in Seattle was cleaned, explored and used as a basis for modeling a predictive Model with a Linear Regression Algorithm

- The best Model included the 30 highest correlated variables with the target and had a R2 of 0.77 (RMSE 173361). It was better than the model including all of the variables (R2 0,56)
- The sales of all months in the Interval from 2014 to 2015 were roughly the same, this might point to an issue with the dataset

Ideas to improve Prediction by the Linear Regression Algorithm

- Other methods for replacing missing values could be tested or more data derived from other sources. Also, geographical Data given could give a hints
- Possible irregularities and typos found in the dataset should be amended (Sales and number of bedrooms)
- A Feature pulling together Information about the Age and Condition of a House and if it was renovated and when could prove to be useful
- The Date of the Sale could be important due to the high volatility of the housing market if Market Data were included
- Demographics and Crime Data could be included
- Polynomial Features could be included to account for possible nonlinear Relationships
- Transformation of the price data could be helpful to improve the distortion of house prices due to the luxury segment of the market
- Multicollinearity in the data should be reduced

Addendum
Who has 33 bedrooms...not this guy



Addendum: 7700000 $ House looks reasonable, no typo here