Staircase to Better Home Values

MODULE 2 FINAL PROJECT

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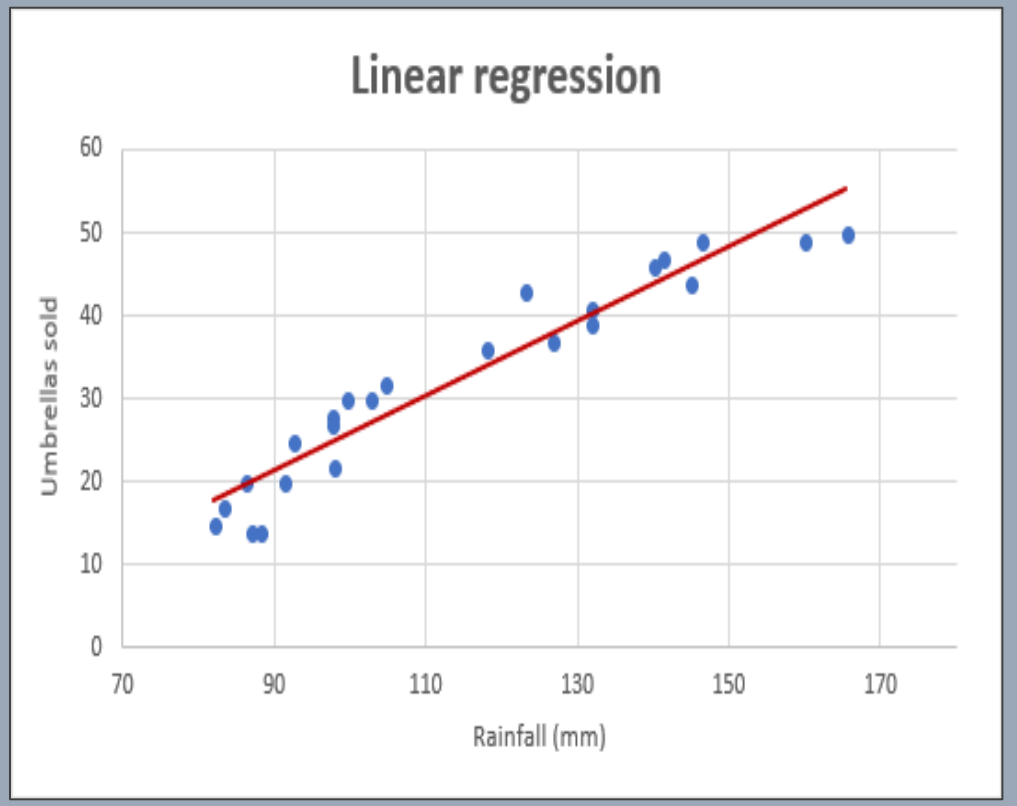
Introduction

How to leverage a linear regression model to boost home values in King County, WA

What is a Linear Regression Model

- *A regression model helps to explain the relationship between two or more variables by fitting a line through the observed data.*
- *Examples*
- *How does rainfall affect umbrella sales*
- *How do height and gender increase or decrease weight*
- *Rainfall, height and gender are also known as predictors in a regression model*

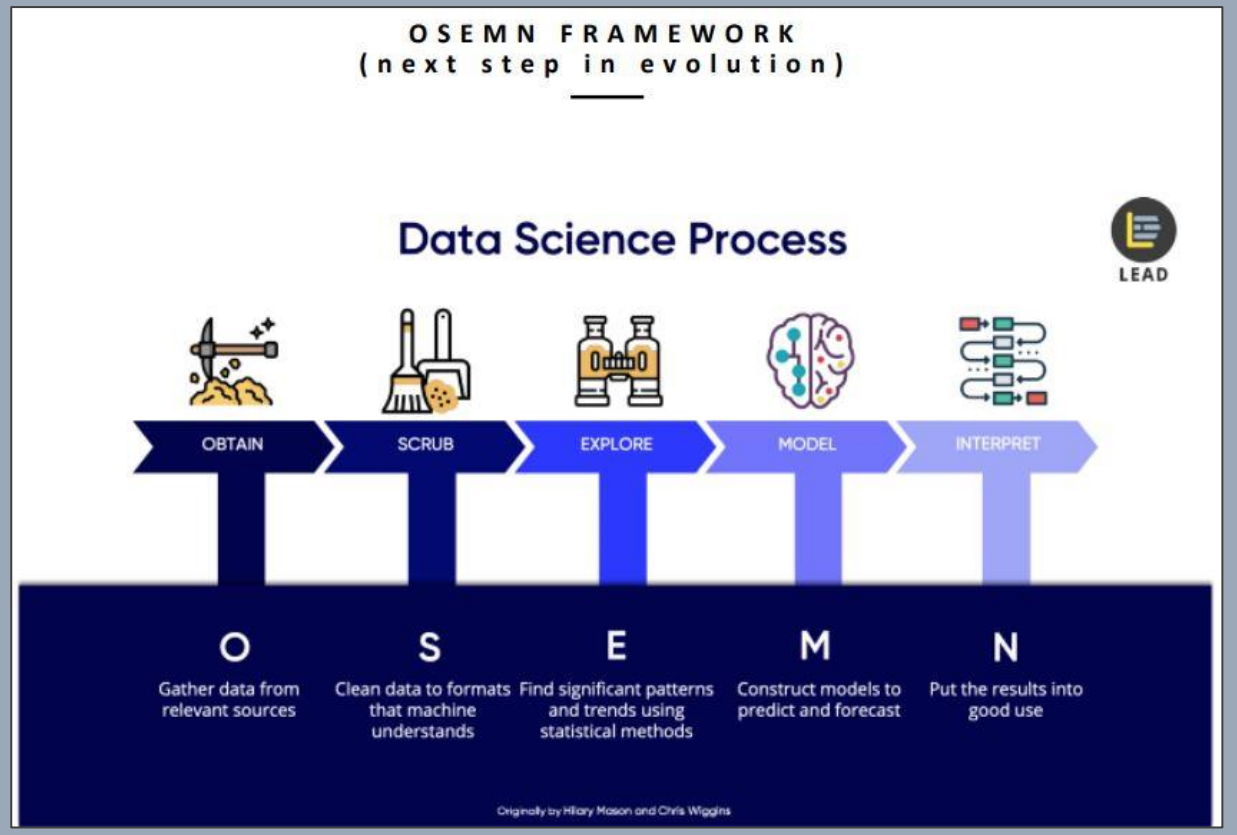


Data Background

- *The regression model is built based on census data provided by King County, WA*
- *The census contains approximately 21,500 home sale records*

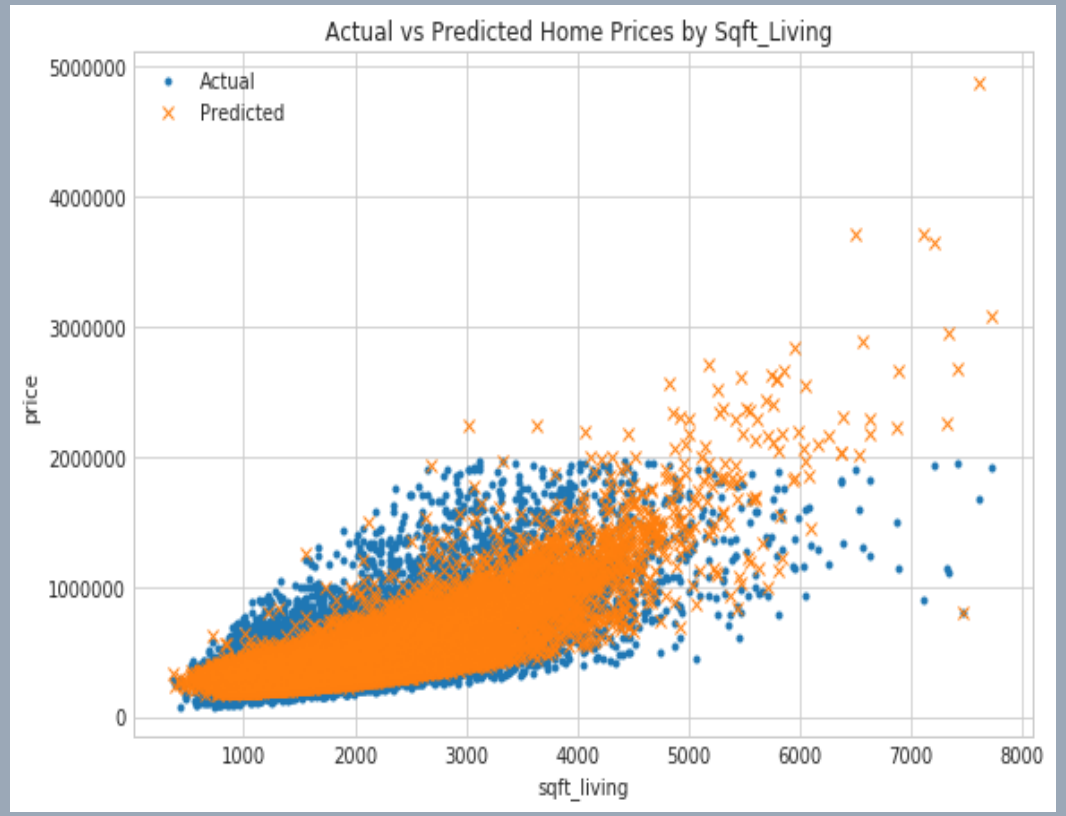
Model Preparation

- *Data is cleaned and processed according to the OSEMN framework*
- *All prerequisites and requirements are strictly followed to produce an accurate model*



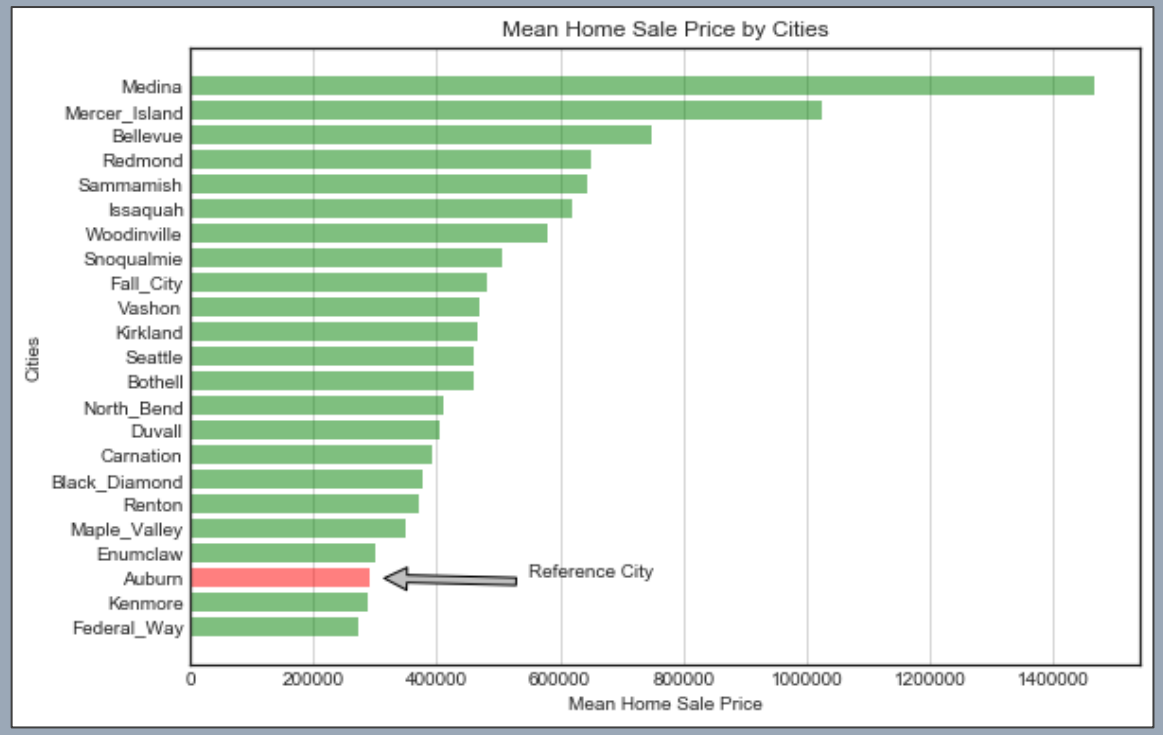
Model Performance & Model Predictors that Increase Home Value: Square Feet Living

- *R^2 is a measurement of how well the line fits through the observed data*
- *Our final model has an established R^2 of 0.70. In other words, 70% of the variations in home prices can be explained by our predictors*
- *The predictor square feet living proves to be a good predictor of home prices. As square feet living increases, so do prices*
- *The model indicates that for every 100 units increase in square feet living, home prices increase by 3%*



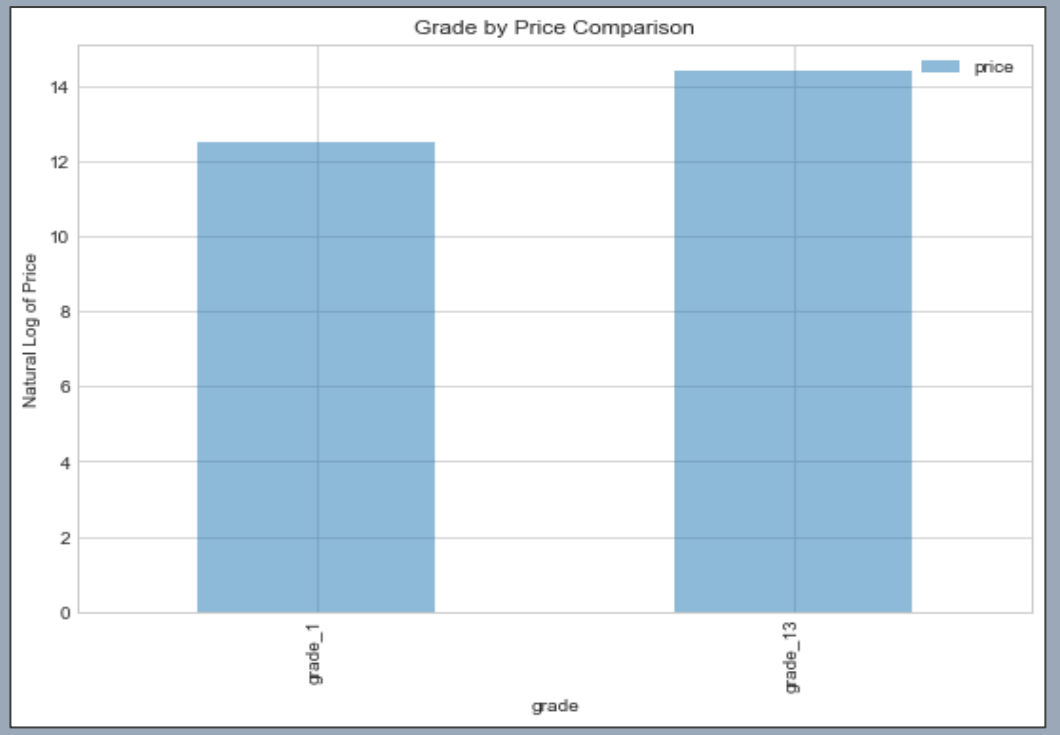
Model Predictors that Increase Home Value: Location

- *According to the source data, the top three cities with the highest average home prices are Medina, Mercer Island and Bellevue*
- *In general, houses in Medina cost 264% more than houses in Auburn*
- *Mercer Island comes in second, with a premium of 151%*



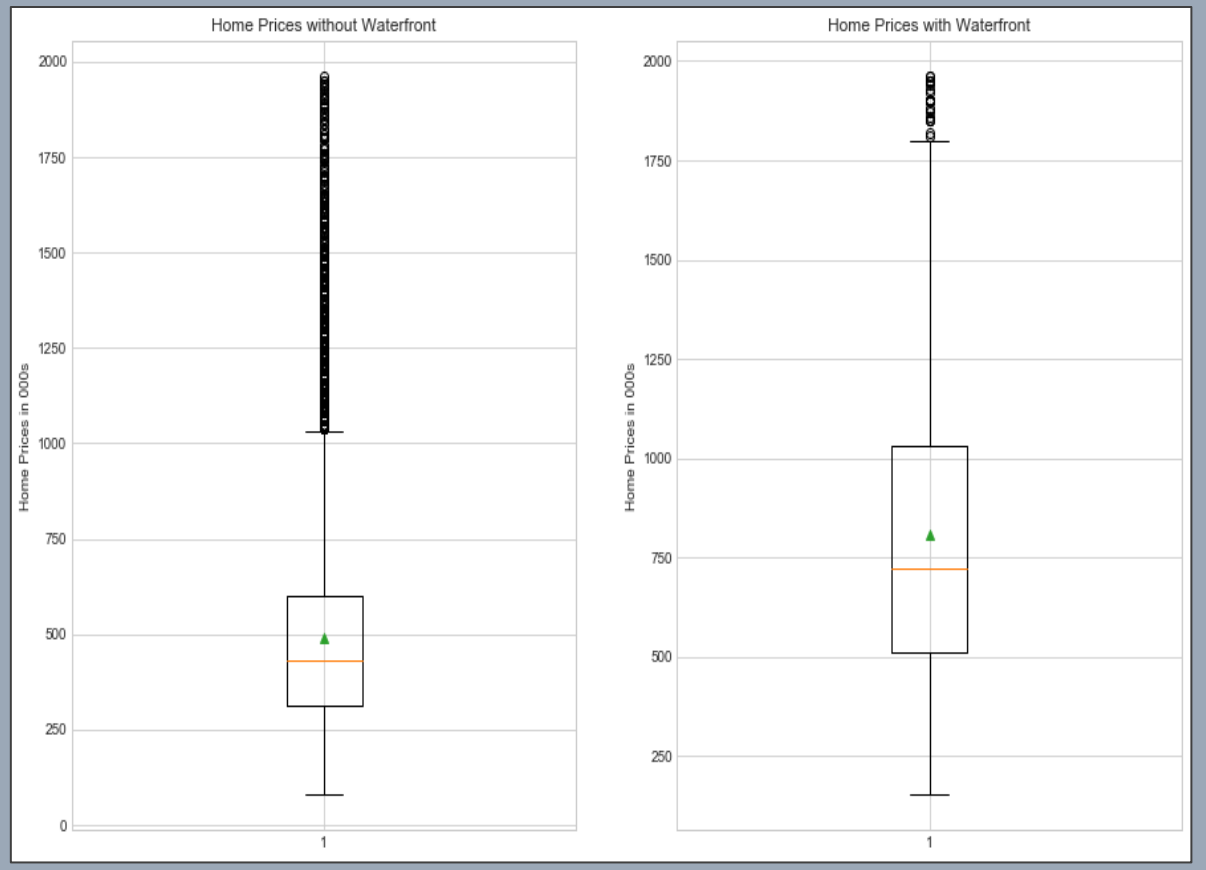
Model Predictors that Increase Home Value: County Grading

- *King County grades their houses based on the quality of the build*
- *Houses with a higher grade cost more than those with a lower grade. In this case, a grade 13 house will cost approximately 89% more than a house with a grade 1 rating*



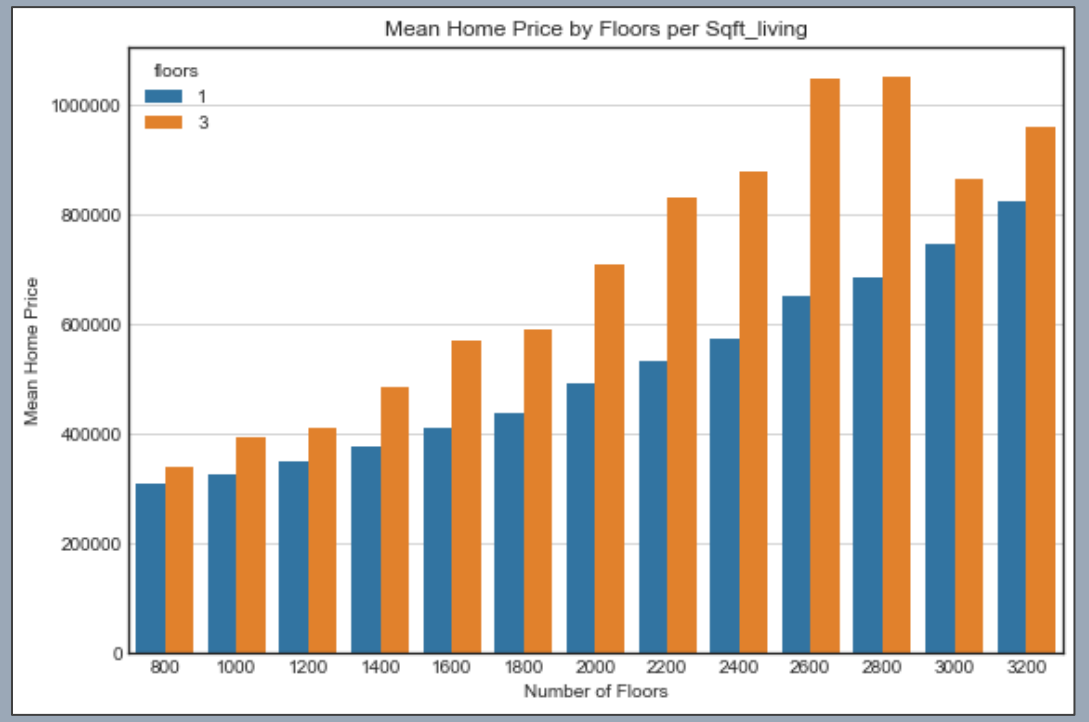
Model Predictors that Increase Home Value: Waterfront

- *The chart shows the price differences between a waterfront house and one without the waterfront*
- *The model predicts that a waterfront home will cost 50% more than one not near the waterfront*



Model Predictors that Increase Home Value: Number of Floors

- *For similar squared footage, a three story house will generally costs 22% more than a single story house*



Recommendations to Boost Home Values Based on the Linear Regression Model

- *Add living spaces because every 100 units increase in squared foot living, increase home values by 3%.*
- *Perform general repairs and maintenance on homes as these will improve the county grading and result in as much as an increase of 89% in home values over houses with the lowest grading.*
- *Construct additional floor(s) to the existing property since multi-story homes carry a 22% premium over single story houses.*
- *Waterfront properties are highly sought after and they can cost up to 50% more than those without a waterfront. Buyers with suitable waterfront life style should consider this predictor.*

Regression Model can be a Powerful Tool to Predict Home Sale Prices

- *The model contains 36 predictors, each with different degrees of effect on home prices.*
- *Finding the predictors that best suit your home will guide you to undertake the correct actions to increase home value*

Future Work

- *Construct alternate linear regression model using stepwise selection*
- *Reclass categorical predictors such as bedrooms and bathrooms back to numerical variables*
- *Implement log transformation, normalization and standardization on predictors*
- *Create a separate model specifically targets the outliers in the home sale price*

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