Magical Homes Real Estate

Exploring Home Renovations through Multiple Linear Regression Analysis

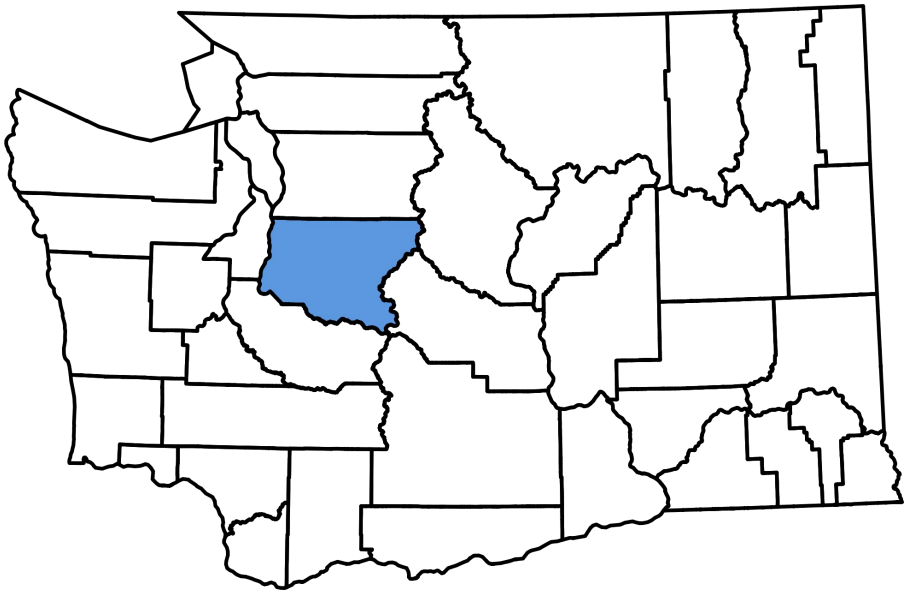
Outline

- Business Problem
- Summary
- Data & Methods
- Results
- Conclusions

Business Problem

This presentation will analyze a current dataset that captures unique information about specific houses and the sale price of that home in King County, Washington State.

The object of the analysis will be use the data to provide a local real estate agency, Magical Homes Real Estate, with relevant advice to homeowners that are considering renovating their home to increase the value of the home.



Summary

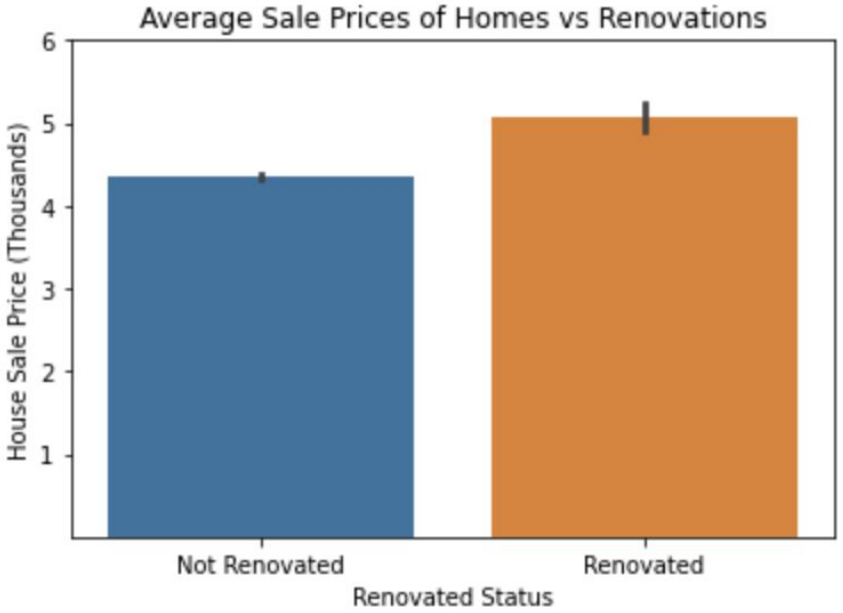
The data analysis used an **inferential** approach in building a multiple linear regression model to evaluate how the different variables provided in the data set affect the sale price of a home. Ultimately, the modeling process surfaced three key areas that homeowners can focus on when renovating to increase the sale price of the home:

- **Overall Condition:** A rating of ‘Poor’ to ‘Very Good’ that denotes the level of maintenance that the house may require to increase the life expectancy and utility of the home.
- **Grade:** A number rating from 1 to 13 that denotes the quality of architecture, construction and cosmetic complexity of the home.
- **Square Foot Living Space:** The square footage of the home that has walls and floors, as well as any space that can be heated and cooled.

Renovation vs. Price

Before starting to model, we used the cleaned dataset to confirm that renovations impact the sale price of the home:

- Homes that are renovated have an average sale price of $507,425 dollars
- Homes that have not been renovated have an average sale price of $435,322 dollars



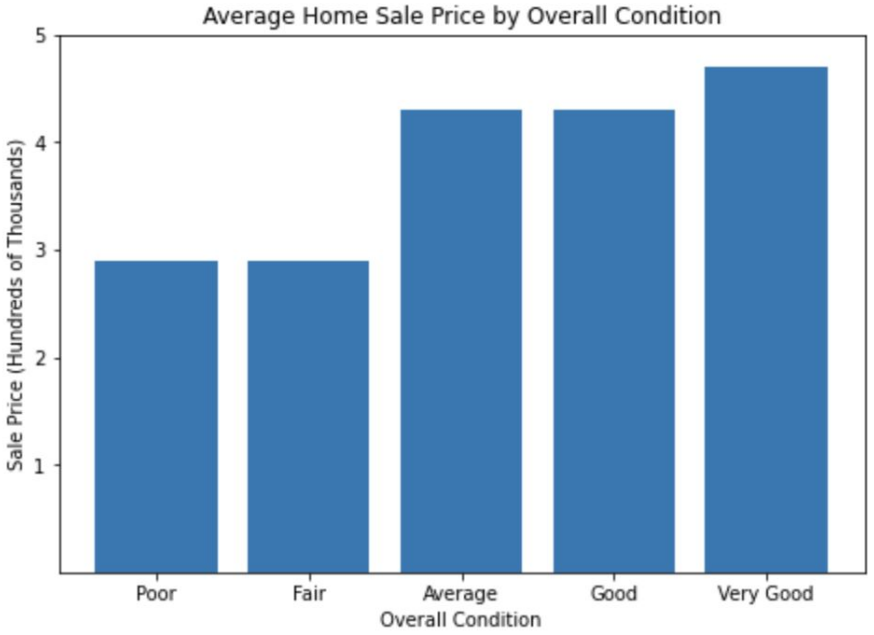
Data and Methods

1. Clean the dataset and remove extraneous or unclear values
2. Prepare the data for modeling
3. Explore the Data using plots to understand data distribution
4. Begin modeling using an iterative process to strengthen how the model understand each data variable
5. Interpret the variables of the final model

Overall Condition of Home

The plot on the right demonstrates average home sale prices by Condition category. A more complex multiple linear regression model found that:

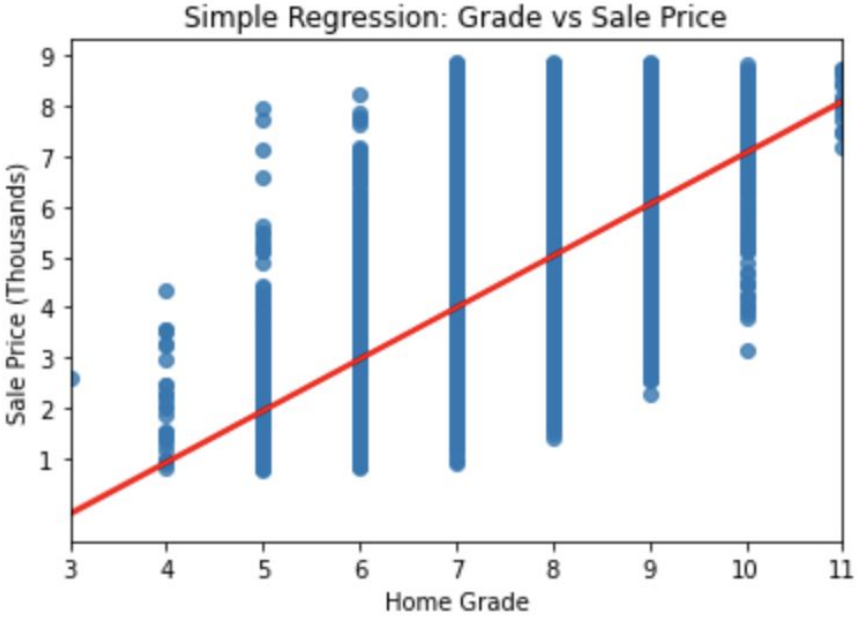
- Homes that are in ‘Good’ condition will increase the sale price by about $31,500
- Homes that are in ‘Very Good’ condition will increase sale price by about $81,500



Home Grade

The plot on the right demonstrates a simple linear relationship between Grade and Sale Price and helps us understand how the two variables interact with each other.

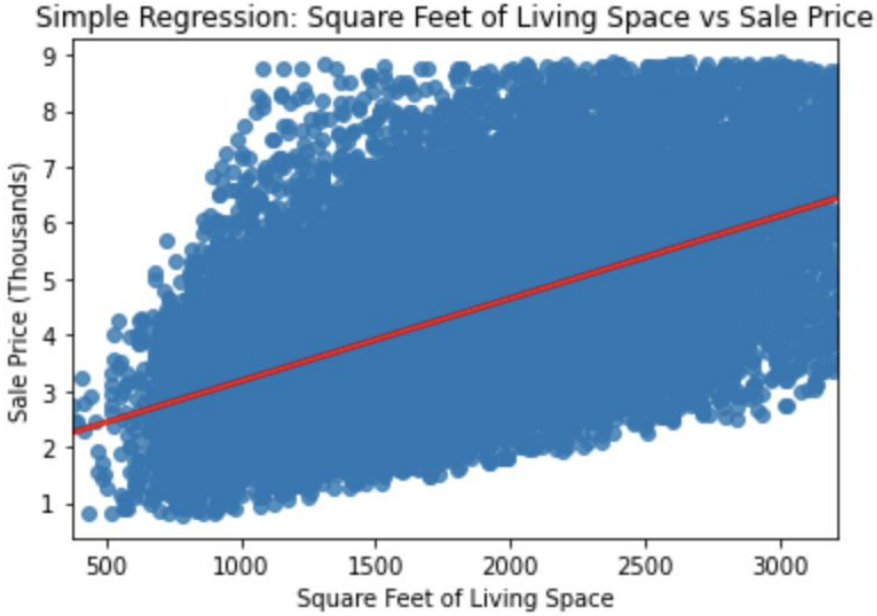
A multiple linear regression model found that an increase of 1 point in grade yields an **$83,000** increase in sale price.



Square Feet of Living Space

The plot on the right shows a simple linear relationship between square feet of living space and the sale price of the home.

The multiple regression model found that increasing living space by 1 square foot would yield an increase in sale price by about **$72**. To frame this better for a homeowner, adding on a new room of 500 square feet, like a garage or wreck room would increase the sale price of the home by about $36,000.



Conclusions

- Magical Homes Real Estate should encourage homeowners to embrace renovations if their objective is to increase the sale price of the home
- Magical Homes Real Estate should be well versed in the King County Assessor definition for Condition and Grade so that they can assess a homeowner’s property and make relevant suggestions to increase the values of one or both
- Magical Homes should help homeowners with creative solutions and suggestions to increase the square footage of living space in the property

Future Work

- Acquire a new data set on the cost of different home renovations to be able to compare the cost of renovation vs the potential increase in sale price.
- Group data sets based on location and home cost to generate new models that have even better results based on home type.
- Take a predictive approach and build a model that can give homeowners an accurate representation of sale price when they make changes to their home .