Real estate Resale Needs Analysis
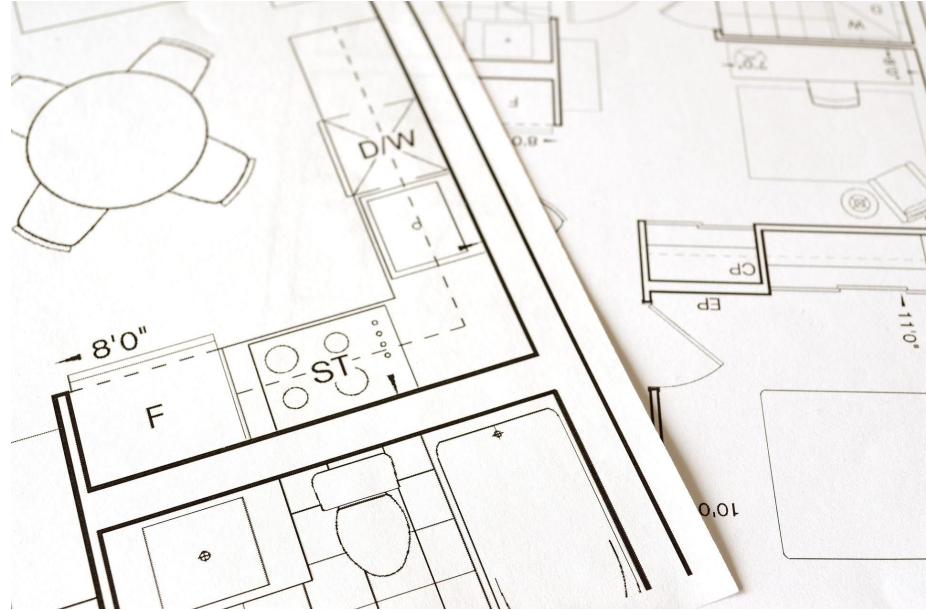
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Summary

Descriptive and inferential analysis of the data from King County House Sales depicted correlations between aspects of house renovations that are more profitable.

Outline

- Business Problem/Data
- Molding
- Regression results
- Recommendations
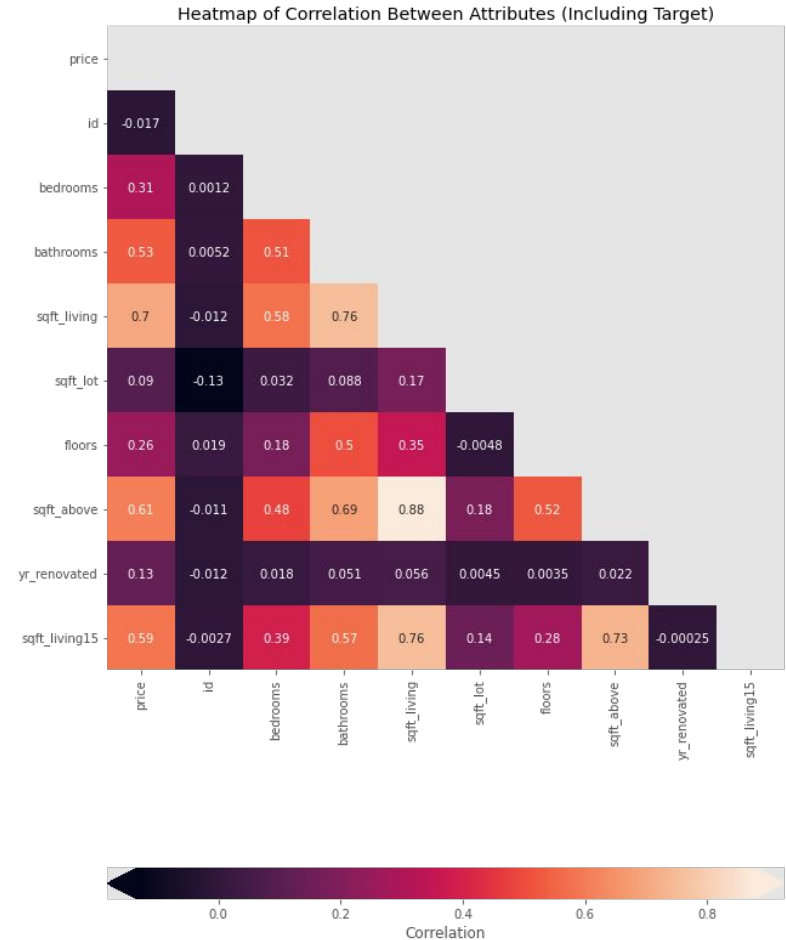- Next Steps
- Thank you

Business Problem/Data

- What features of home renovations in King County lead to the most resale profit.

- The Data utilized is the King County House Sales dataset provided by csv file.

Molding

My base model was founded upon finding out that the square feet of the living space was the most correlated with the prices of the houses.

I then tried two more models in order to improve the model and account for more variance.

Heatmap of Correlation Between Attributes (Including Target)

Regression Results

- The best model still only accounts for 52% variability observed in the target variable is explained by the regression model.

- We cannot have too much confidence in the models

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OLS Regression Results
==============================================================================
Dep. Variable:              price   R-squared:                       0.516
Model:                        OLS   Adj. R-squared:                  0.516
Method:             Least Squares   F-statistic:                     3838.
Date:            Mon, 20 Jun 2022   Prob (F-statistic):               0.00
Time:                    07:41:45   Log-Likelihood:             -2.9955e+05
No. Observations:           21597   AIC:                         5.991e+05
Df Residuals:               21590   BIC:                         5.992e+05
Df Model:                       6
Covariance Type:        nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
const         2.529e+04   7767.497      3.256      0.001    1.01e+04    4.05e+04
bedrooms     -5.849e+04   2344.638    -24.945      0.000   -6.31e+04   -5.39e+04
bathrooms     8484.0009   3510.979      2.416      0.016    1602.223    1.54e+04
sqft_living    306.6200      4.857     63.127      0.000     297.100     316.141
sqft_lot        -0.3643      0.043     -8.481      0.000      -0.449      -0.280
sqft_above     -41.7428      4.505     -9.265      0.000     -50.574     -32.912
sqft_living15   68.7786      3.986     17.255      0.000      60.966      76.592
==============================================================================
Omnibus:                15038.016   Durbin-Watson:                   1.984
Prob(Omnibus):              0.000   Jarque-Bera (JB):           600535.454
Skew:                       2.858   Prob(JB):                         0.00
Kurtosis:                  28.193   Cond. No.                     2.02e+05
==============================================================================

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 2.02e+05. This might indicate that there are
strong multicollinearity or other numerical problems.
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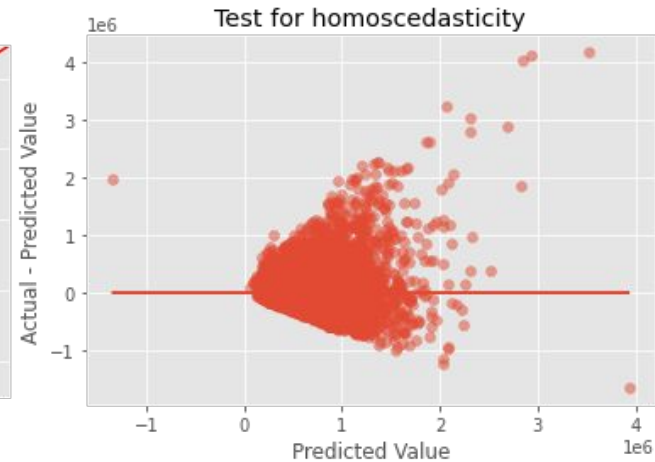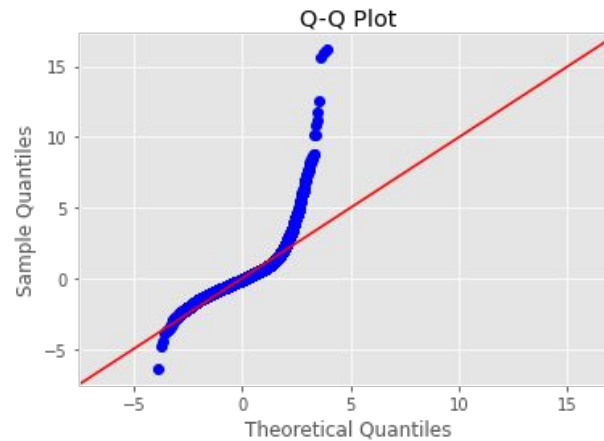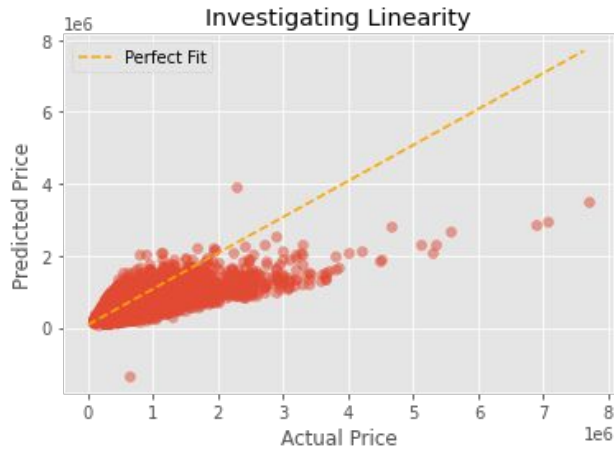
Regression Results

- The three tests of multicollinearity shown below also depict that the models are not reliable.

Recommendations

This analysis leads to a small correlation between price and the aspects of the houses:

- I would tentatively advise the local real estate office that renovations for more sqft of space within the house and additions of bathrooms and bedrooms could gain more of a profit than other potential renovations.

Next Steps

Further analyses could yield additional insights to further aid in the local real estate office at King County:

- Perhaps collecting a wider pool of data would add in adding variance and leading to a stronger correlation between the values as well as looking into other aspects of what renovations entell, such as the expense for particular jobs, trends in home making magazines and many other aspects that could lead to different renovation recommendations for the most profit in selling the houses.

Thank You!

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