Northwestern County: Real Estate Market Analysis

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1.0 Business Problem

Which property attributes largely collectively influence the estimated value of homes to help the agency make strategic decisions for optimal return on investment for buyers and sellers?

To answer this question, our modeling determines which factors have the biggest positive effects on sale price.

2.0 Business and Data Understanding

The Data:

- King County Housing data
- Includes 20 housing variables ranging from bathrooms to sqft_basement
- We omitted irrelevant variables.
- Categorical variables were dropped, and dummy variables were created
- Regression models were created

Final variables include:

- Sqft_living, bathrooms, sqft_above, sqft_living15, view, waterfront.

3.0 Modeling

Regression modeling fulfills two objectives in relation to our business case:

1. Identifies significant variables by examining the relationship between price and the variables we defined.

2. Offers a factor (referred to as model coefficients) by which pricing fluctuates in response to changes in our variables.

4.0 Model Results

OLS Regression Results

Dep. Variable:	price	R-squared:	0.506
Model:	OLS	Adj. R-squared:	0.506
Method:	Least Squares	F-statistic:	2762.
Date:	Tue, 02 Jan 2024	Prob (F-statistic):	0.00
Time:	05:19:56	Log-Likelihood:	-9010.2
No. Observations:	21567	AIC:	1.804e+04
Df Residuals:	21558	BIC:	1.811e+04
Df Model:	8		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	6.3165	0.070	89.833	0.000	6.179	6.454
sqft_living	0.5606	0.014	39.339	0.000	0.533	0.589
bathrooms	0.0949	0.016	6.080	0.000	0.064	0.126
sqft_above	-0.0152	0.012	-1.256	0.209	-0.039	0.009
sqft_living15	0.3286	0.012	27.579	0.000	0.305	0.352
view_AVERAGE	0.2063	0.012	16.634	0.000	0.182	0.231
view_EXCELLENT	0.5959	0.021	27.914	0.000	0.554	0.638
view_FAIR	0.2479	0.021	12.034	0.000	0.207	0.288
view_GOOD	0.2797	0.017	16.581	0.000	0.247	0.313

Omnibus:	156.856	Durbin-Watson:	1.971

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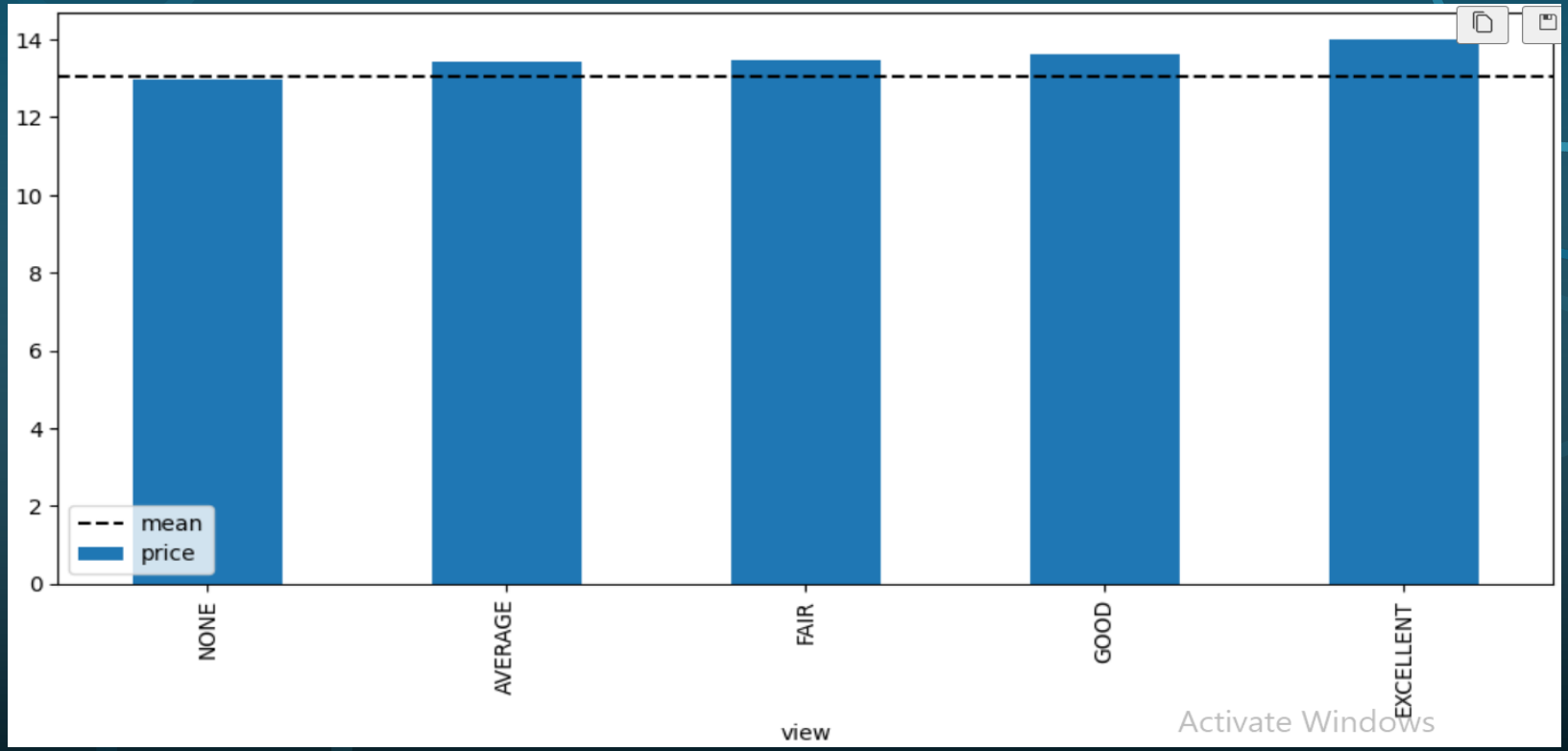
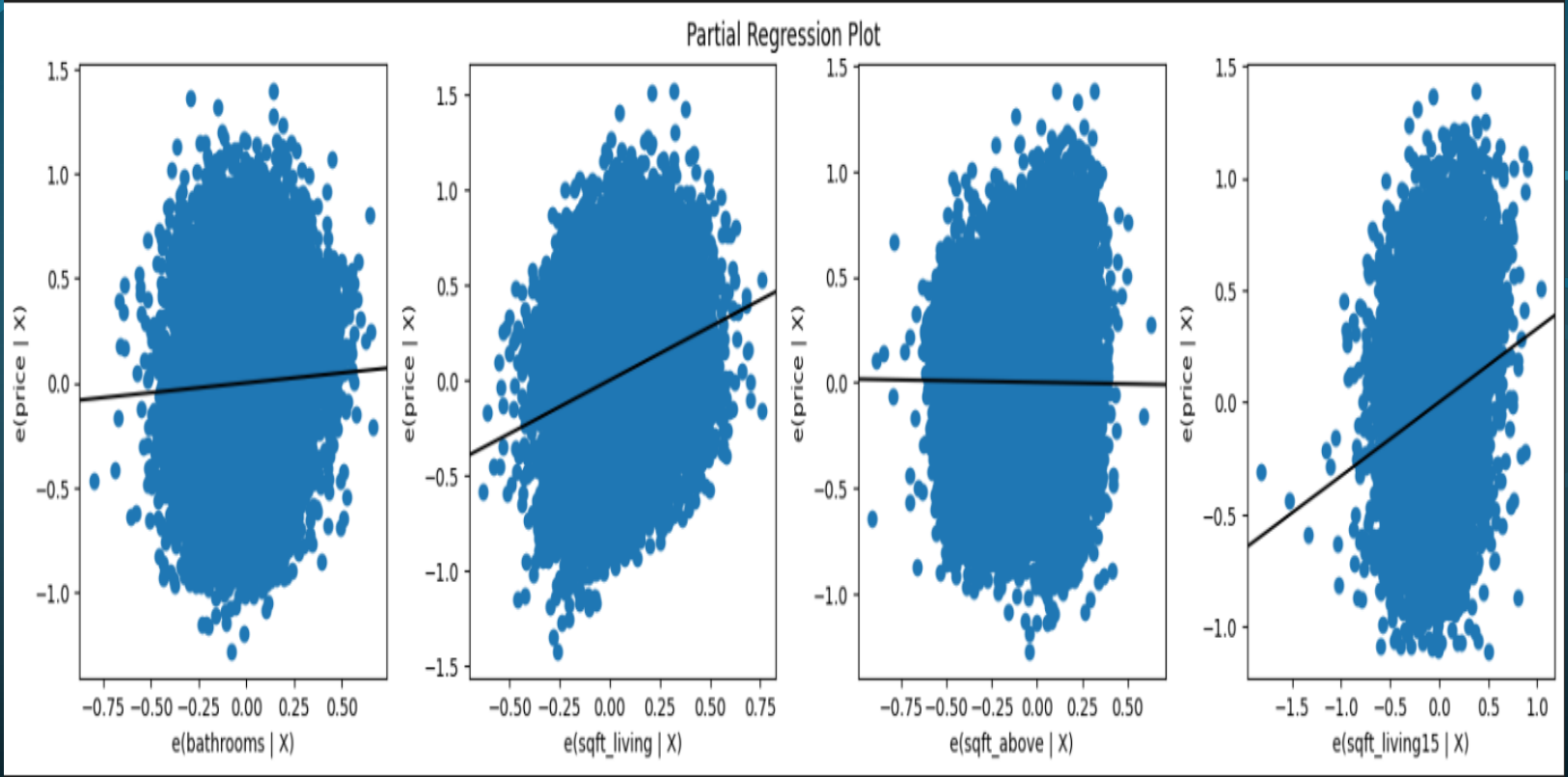
Visualizing to check relationship between different view and house price



Partial regression plot



4.0 Recommendations

It is highly recommended that the audience focus on the attributes of‘ sqft_living', 'bathrooms','sqft_above','sqft_living15', and 'view’ when deciding on the prices of houses. These variables are the key predictors of house prices in King County. The variables showed strong positive correlations, suggesting that an improvement in the variables increases prices.

When choosing a model, it's important to balance complexity and performance. Depending on your objectives, you might opt for a simpler model with fewer features, especially if interpretability is a key priority.

5.0 Limitation

Variable Selection: The choice of variables included in the models may not be exhaustive. There could be other important factors influencing house prices that are not considered in the current models.

6.0 Conclusion

House properties influence prices of houses. The model suggests 'sqft_living', 'bathrooms', 'sqft_above', 'sqft_living15', and 'view' influence prices of houses in the county.

Thanks!

Any questions?

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