


LANDINGPad Realtors Real Estate Marketing Plan King County

Presented by: Tenicka Norwood





"At the turn of the century, the average U.S. home value was \$126,00. Today that figure has seen a 106% increase in just two decades"

—Nick Routley in *Visual Capitalist*

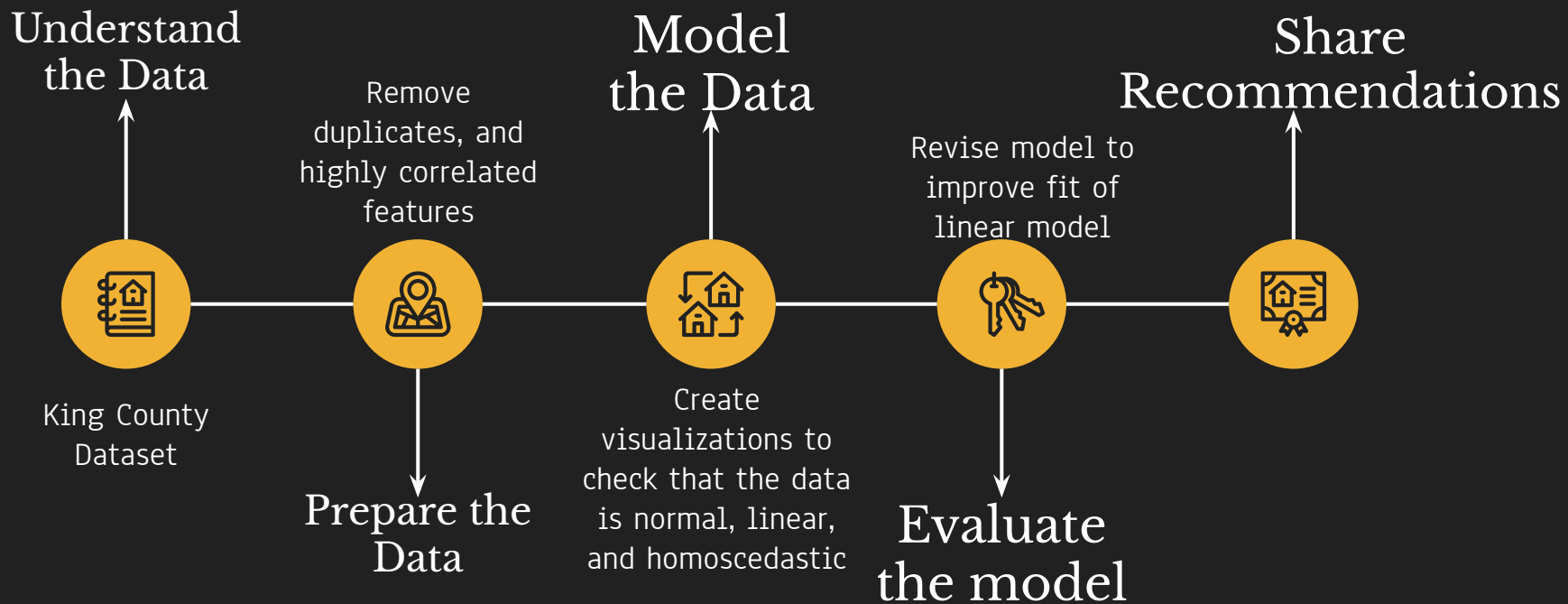


Project Goals

We want to curate a set of homes for clients based on the following:

- Which neighborhoods have the highest average home price?
- How does the number of bedrooms affect the sale price of a home?
- How does proximity to a highly rated school affect the sale price of a home?

Methods



Problem

Homeowners want to minimize the purchase price of home while maximizing the proximity to Above Average Schools for their children



Solution

Linear Regression models can help us identify homes that meet buyer criteria based on historical home sale price of homes in King County

Methods



OLS Regression Results

Dep. Variable:	price	R-squared:	0.365
Model:	OLS	Adj. R-squared:	0.365
Method:	Least Squares	F-statistic:	1.158e+04
Date:	Sun, 22 Jan 2023	Prob (F-statistic):	0.00
Time:	19:28:30	Log-Likelihood:	-2.6946e+05
No. Observations:	20139	AIC:	5.389e+05
Df Residuals:	20137	BIC:	5.389e+05
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	1.607e+05	3061.929	52.468	0.000	1.55e+05	1.67e+05
sqft_living	157.1496	1.461	107.596	0.000	154.287	160.012

Omnibus:	704.434	Durbin-Watson:	1.961
Prob(Omnibus):	0.000	Jarque-Bera (JB):	780.694
Skew:	0.482	Prob(JB):	2.98e-170
Kurtosis:	2.973	Cond. No.	5.82e+03

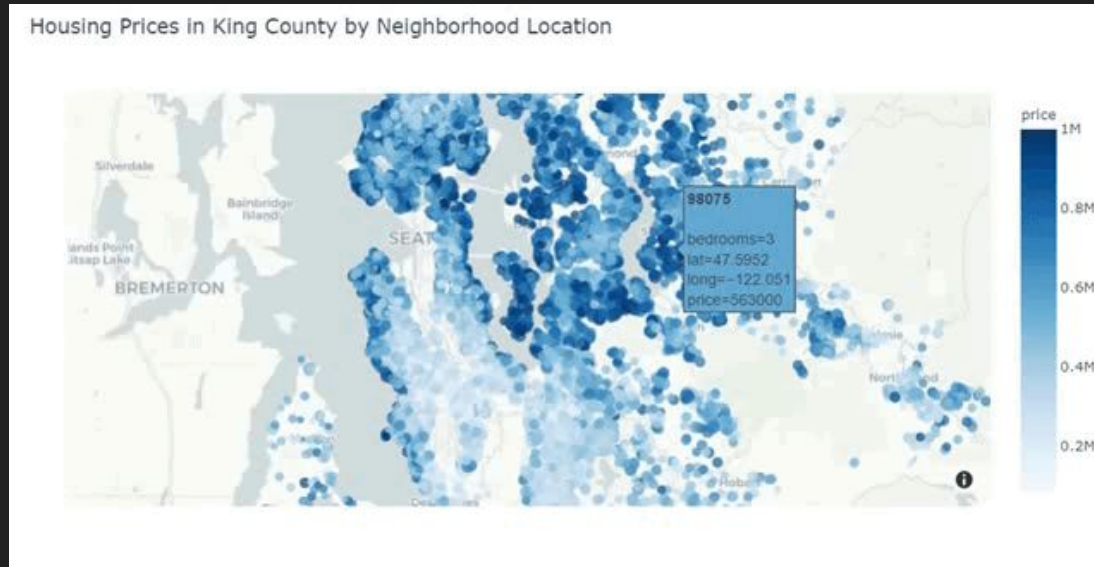
Initially our model used a Simple Linear Regression Model and could explain 36.5% of the variance in sale price in King County dataset.

Revised Model

OLS Regression Results			
=====			
Dep. Variable:	price	R-squared:	0.810
Model:	OLS	Adj. R-squared:	0.809
Method:	Least Squares	F-statistic:	1274.
Date:	Sun, 22 Jan 2023	Prob (F-statistic):	0.00
Time:	20:08:24	Log-Likelihood:	-2.5734e+05
No. Observations:	20139	AIC:	5.148e+05
Df Residuals:	20071	BIC:	5.153e+05
Df Model:	67		
Covariance Type:	nonrobust		
=====			

Our revised model used Multiple Linear Regression Model and could explain 81.0% of the variance in sale price in King County dataset.

Which neighborhoods have the highest average home price?



Number of Bedrooms vs. Sale Price King County Data

● Sale Prices

Homes with 2, 4, and 5 bedrooms had sale prices above the median and had little to no variance in price

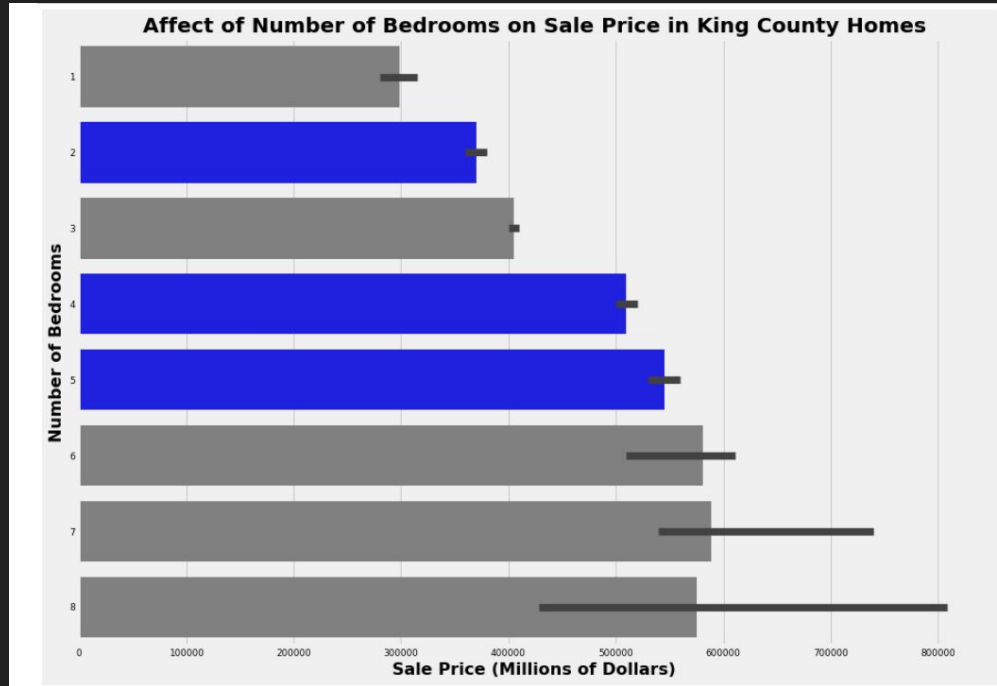
● Median Sale Price

~\$594,000

● Mean Sale Price

~\$467,890

How does the number of bedrooms affect the sale price of a home?



Number of Bedrooms vs. Sale Price King County Data

● Sale Prices

Homes with 2, 4, and 5 bedrooms had sale prices above the median and had little to no variance in price

● Median Sale Price

~\$594,000

● Mean Sale Price

~\$467,890

How does proximity to a highly rated school affect the sale price of a home?



Home Price vs. Distance to Schools King County Data

● Sale Prices

Homes with 2, 4, and 5 bedrooms had sale prices above the median and had smaller variance in price

● Median Sale Price

~\$594,000

● Mean Sale Price

~\$467,890

Results: How does proximity to a highly rated school affect the sale price of a home?

		Total students enrolled	rating_score	school_id
Grades	School			
6-8	Beaver Lake Middle School	852.00	7	16.00
	Issaquah Middle School	988.00	7	15.00
	Pacific Cascade Middle School	1000.00	7	8.00
	Pine Lake Middle School	943.00	8	11.00
9-12	Issaquah High School	2417.00	8	6.50
	Skyline High School	2169.00	10	4.00
K-5	Cascade Ridge Elementary School	487.00	8	8.00
	Creekside Elementary School	723.00	8	9.00
	Endeavour Elementary School	598.00	8	12.00
	Fall City Elementary School	544.00	8	7.00
	Grand Ridge Elementary School	747.00	7	7.00
	Sunny Hills Elementary School	732.00	9	5.00
PK-5	Discovery Elementary School	686.00	9	6.00

Home Price vs. Distance to Schools King County Data

● School Ratings

Highly rated schools are considered those with a Great Schools (™) rating score of 7 or higher out of 10.

● Top Elementary School

Discovery ES

● Top High School

Skyline HS

Recommendations



Number of Bedrooms

2-5



Neighborhoods

High: Clyde Hill
Mid: Fremont, Queen
Anne, Wallingford
Low: Allentown
Lakeland

476K



Proximity

Homes that are within
10 miles of an Above
Average school start
around 476 K

800K

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Future Work

Explore the effect of distance to local attractions:

- Parks
- third places
- places of worship

on sale price in the King County dataset.



Thank you!

Repo at:

https://github.com/dataeducator/real_estate_linear_regression/blob/main/final_project_phase_2.ipynb



Data:

- King County
- Greatschools

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