Home-flipping in King County, WA

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Agenda

- Stakeholders
- Data & Methods
- Findings
- Conclusion
- Future Research

Business Understanding

Stakeholder - house-flipping company in the King County area

Goal for home-flippers ⟶ cookie-cutter model

The Key Qualities

- Location
- Construction Quality
- Amount of Space

Data & Methods

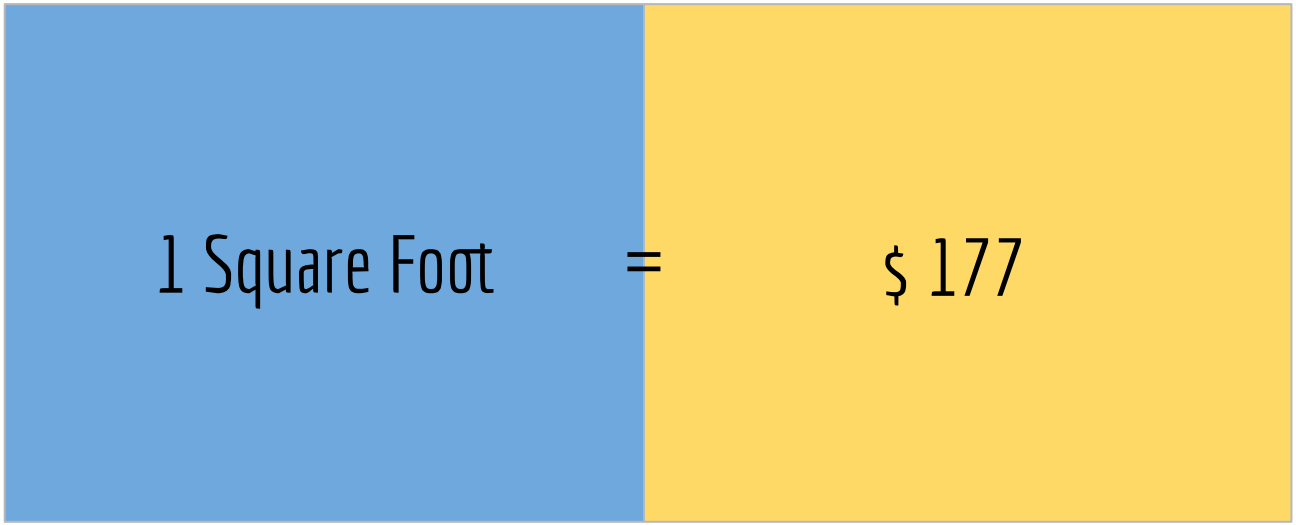
Data

Houses sold in King County between 2014 and 2015

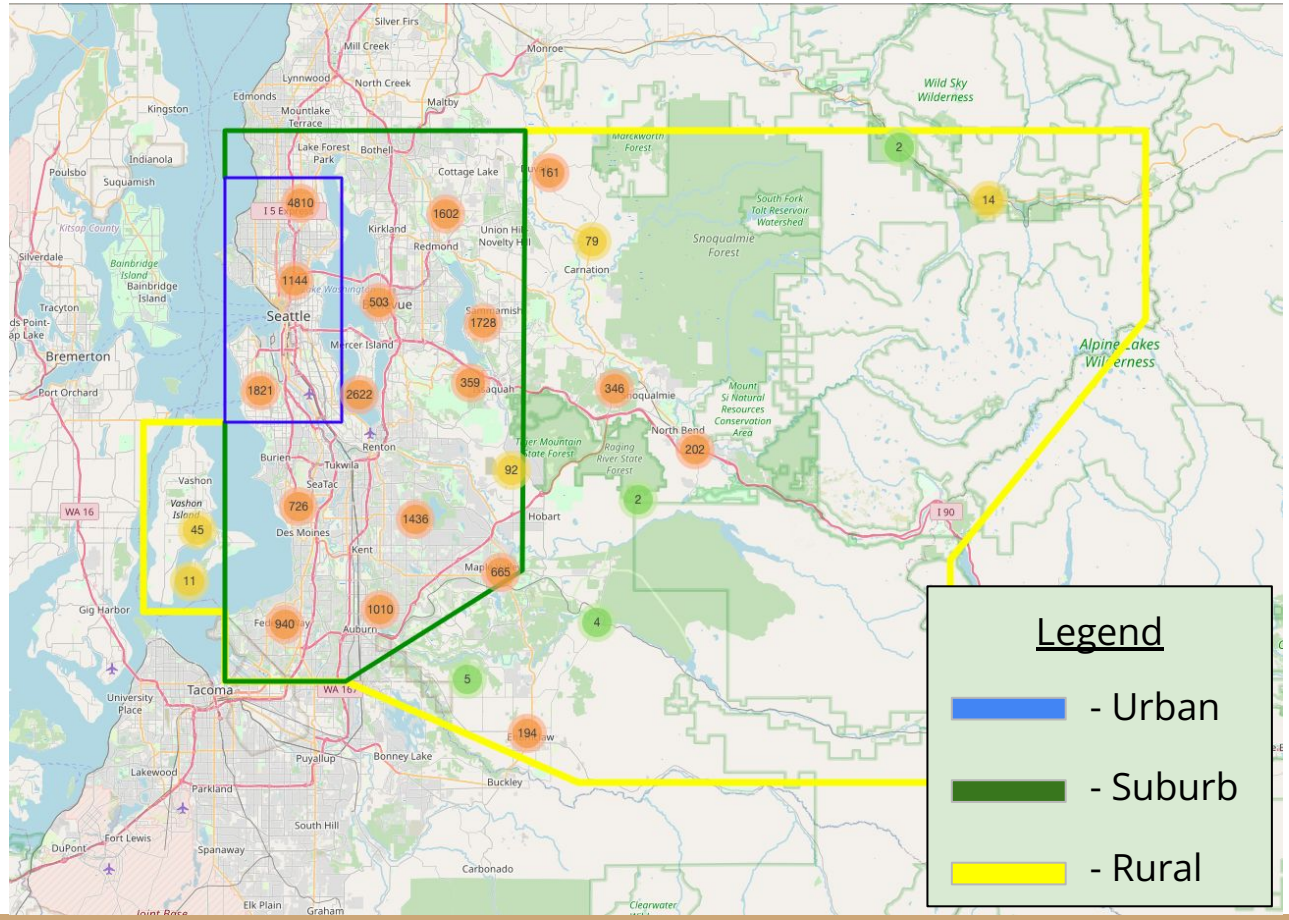
Engineered Features based on Cookie Cutter Model

Findings

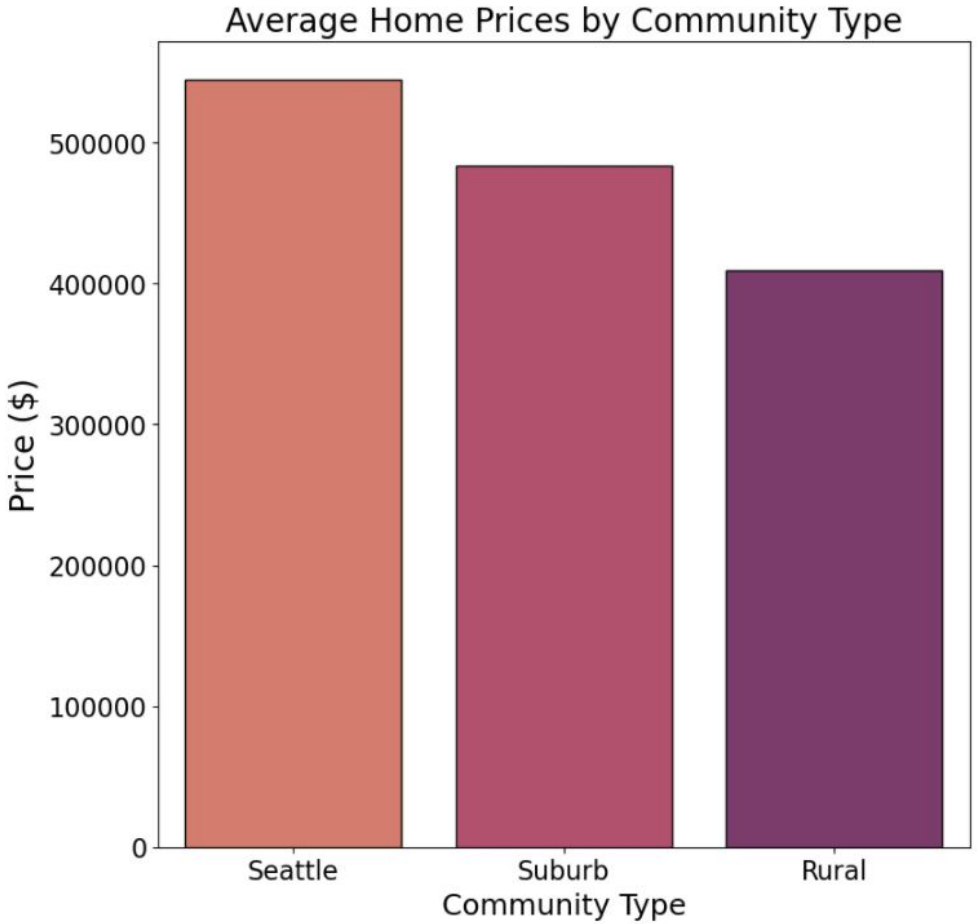
Amount of space ⟶ Livable Space showed most impact on home price



Location → Urban, Suburban, and Rural



Community Type is a Significant Input for Home Price Variability



Conclusion

Location is an important factor in determining project budget

Location Features	Average Impact to Home Price
Suburb	-$155,636
Rural	-$227,240

Focus on livable space and construction quality

Renovation Features	Average Impact to Home Price
Livable Space	$177 ↑
Construction Grade	$71,959 ↑

Future Research

Possible Research in the future

- Increase timeframe of dataset
- Explore other relative neighborhood metrics

Thank you!

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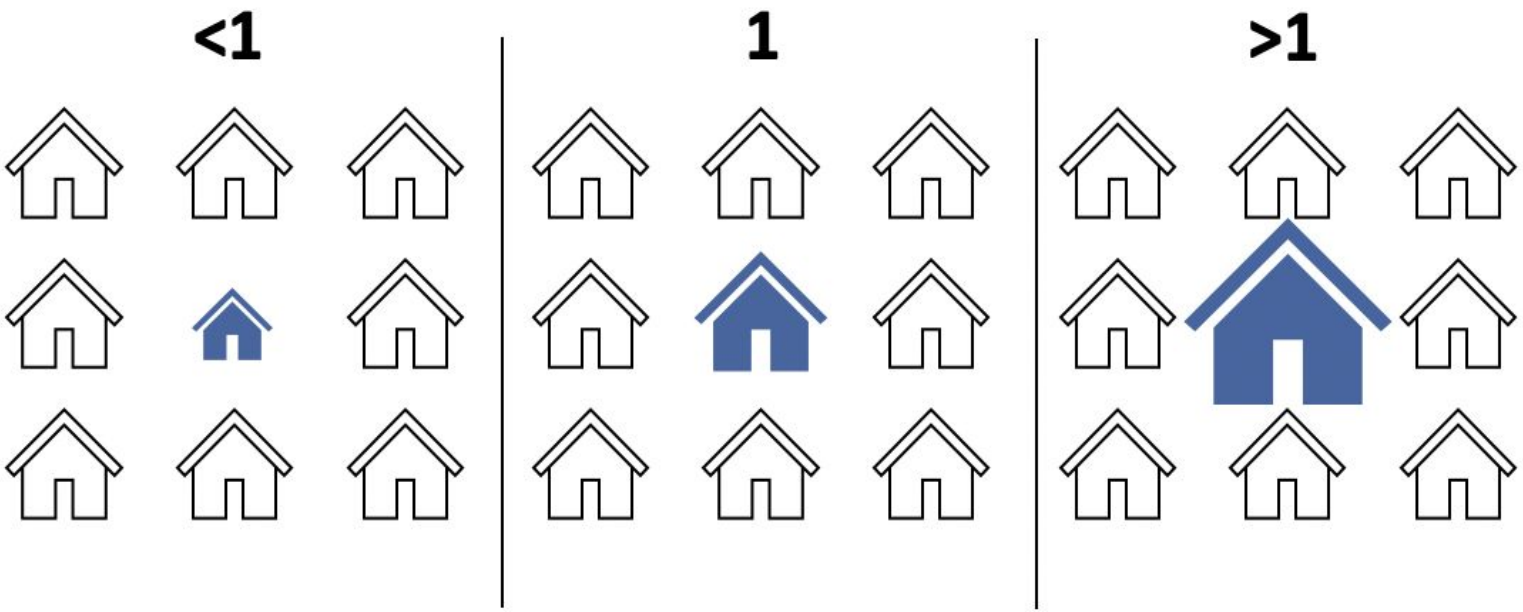
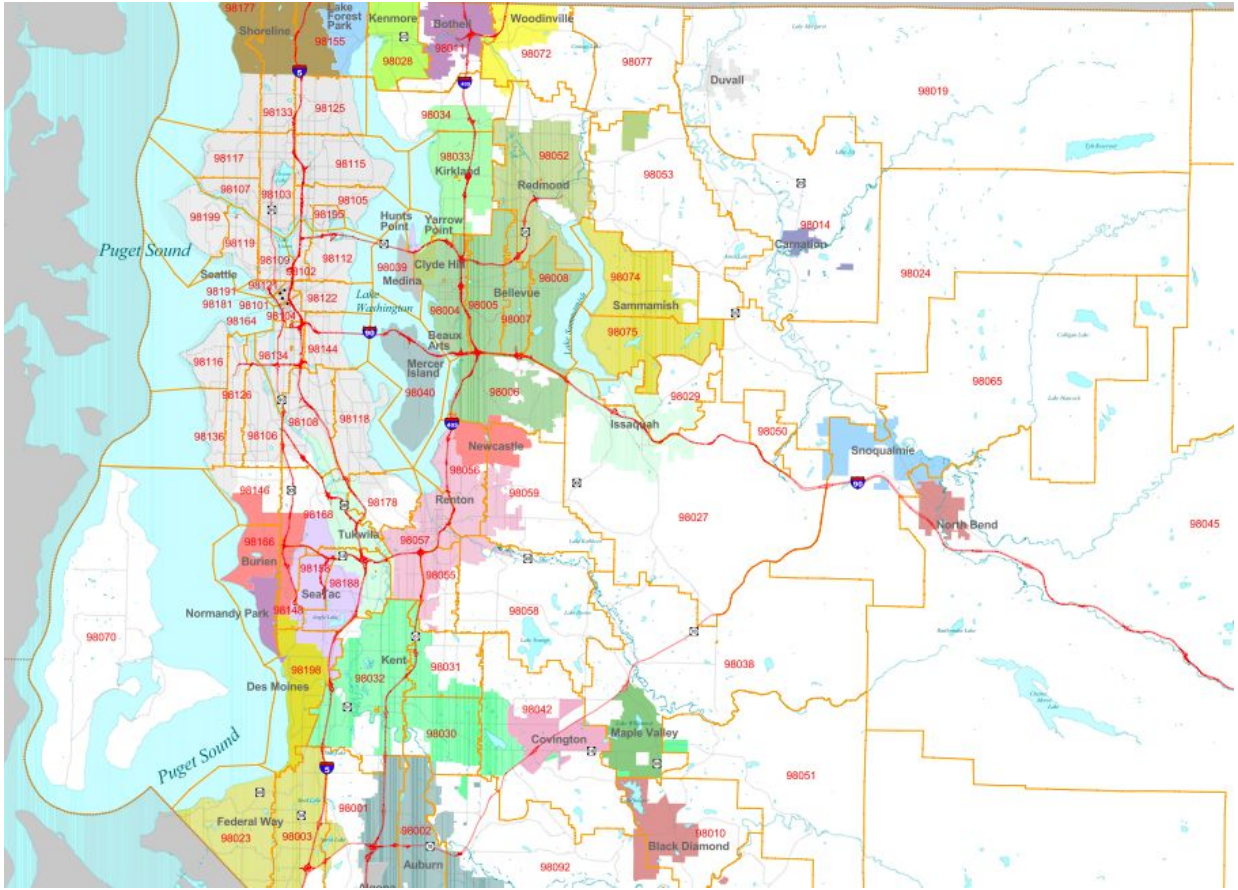
Appendix

Feature Engineering

Relative Living Area




Puget Sound
Puget Sound
Lake Washington
Shoreline
Lake Forest Park
Kenmore
Bothell
Woodinville
Duvall
Kirkland
Redmond
Hunts Point
Yarrow Point
Clyde Hill
Medina
Bellevue
Beaux Arts
Mercer Island
Seattle
Issaquah
Sammamish
Carnation
Snoqualmie
North Bend
Newcastle
Renton
Tukwila
Burien
SeaTac
Normandy Park
Des Moines
Kent
Federal Way
Auburn
Covington
Maple Valley
Black Diamond
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Model Results

Train Dataset OLS Regression Results

OLS Regression Results

Dep. Variable:	price	R-squared:	0.607
Model:	OLS	Adj. R-squared:	0.607
Method:	Least Squares	F-statistic:	4220.
Date:	Wed, 06 Oct 2021	Prob (F-statistic):	0.00
Time:	11:35:26	Log-Likelihood:	-2.1990e+05
No. Observations:	16424	AIC:	4.398e+05
Df Residuals:	16417	BIC:	4.399e+05
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	4.991e+05	1232.572	404.939	0.000	4.97e+05	5.02e+05
sqft_living	1.369e+05	2301.379	59.473	0.000	1.32e+05	1.41e+05
view	3.073e+04	1277.267	24.056	0.000	2.82e+04	3.32e+04
grade	7.811e+04	1883.941	41.460	0.000	7.44e+04	8.18e+04
relative_living_area	-3.705e+04	1590.031	-23.304	0.000	-4.02e+04	-3.39e+04
suburb	-7.642e+04	1445.739	-52.861	0.000	-7.93e+04	-7.36e+04
rural	-7.278e+04	1406.682	-51.739	0.000	-7.55e+04	-7e+04

Omnibus:	3288.957	Durbin-Watson:	2.022
Prob(Omnibus):	0.000	Jarque-Bera (JB):	10142.078
Skew:	1.031	Prob(JB):	0.00
Kurtosis:	6.250	Cond. No.	3.52

Test Dataset OLS Regression Results

OLS Regression Results

Dep. Variable:	price	R-squared:	0.582
Model:	OLS	Adj. R-squared:	0.581
Method:	Least Squares	F-statistic:	949.6
Date:	Wed, 06 Oct 2021	Prob (F-statistic):	0.00
Time:	11:35:26	Log-Likelihood:	-54949.
No. Observations:	4106	AIC:	1.099e+05
Df Residuals:	4099	BIC:	1.100e+05
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	4.958e+05	2452.368	202.160	0.000	4.91e+05	5.01e+05
sqft_living	1.315e+05	4539.602	28.971	0.000	1.23e+05	1.4e+05
view	3.012e+04	2525.386	11.926	0.000	2.52e+04	3.51e+04
grade	7.546e+04	3743.019	20.159	0.000	6.81e+04	8.28e+04
relative_living_area	-3.234e+04	3076.933	-10.510	0.000	-3.84e+04	-2.63e+04
suburb	-7.938e+04	2858.897	-27.765	0.000	-8.5e+04	-7.38e+04
rural	-7.338e+04	2749.503	-26.689	0.000	-7.88e+04	-6.8e+04

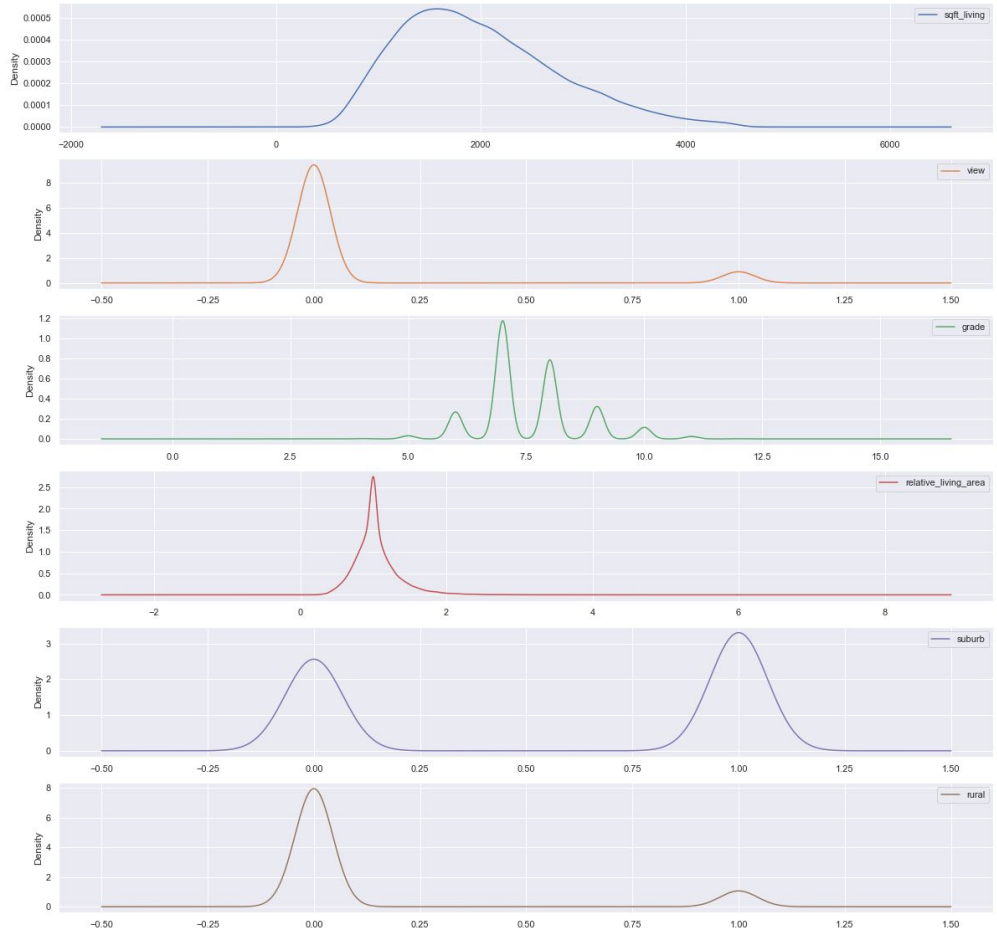
Omnibus:	840.604	Durbin-Watson:	2.033
Prob(Omnibus):	0.000	Jarque-Bera (JB):	2718.625
Skew:	1.028	Prob(JB):	0.00
Kurtosis:	6.415	Cond. No.	3.38

Root Mean Squared Error

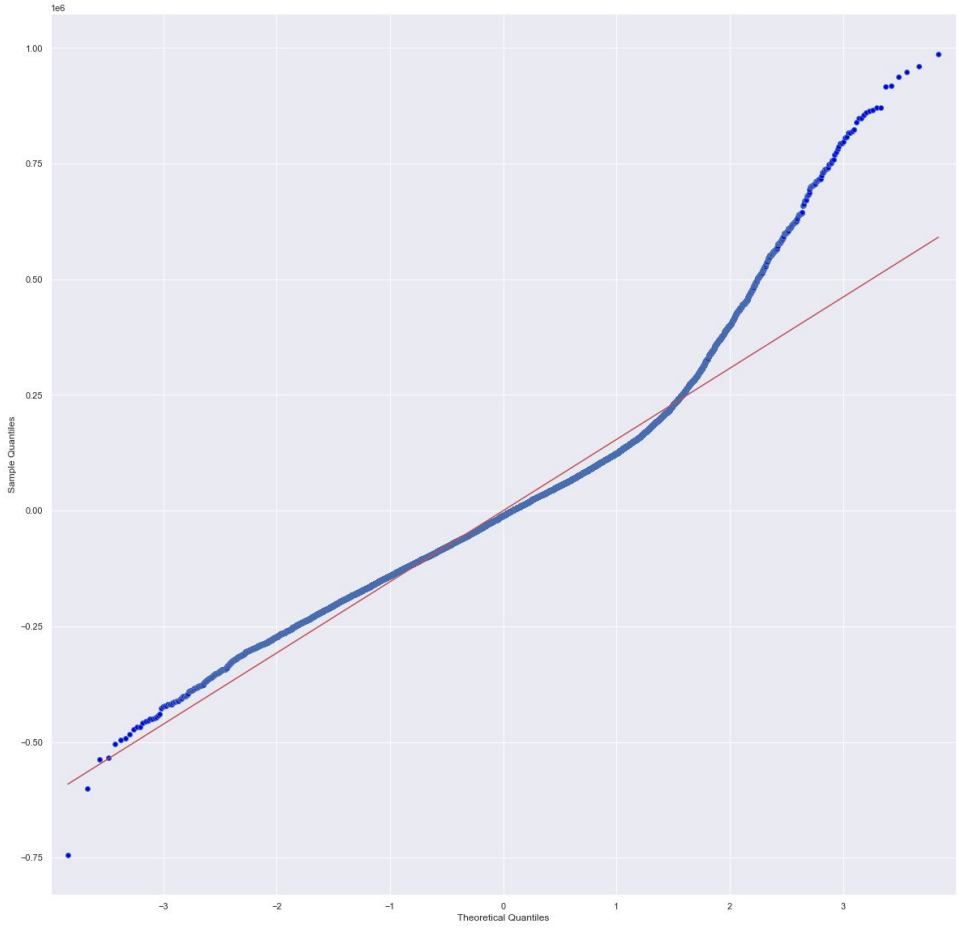
DATASET	RMSE
Train	$157,928.02
Test	$156,958.71
Difference	$969.31

Model Validation

Normalcy of Input Variables



Normalcy of Residuals



Variance of Residual Error