



Ames, Iowa Real Estate Agent Cooperative

Fixing Pricing Metrics: A
Data Centered Solution



What is Wrong With Real Estate Pricing?

- As Real Estate Agents, our value is in getting our clients the best value.
- We are relying on 20th century methodology to accurately price properties
- We are using comparatives that are not in depth enough to accurately price our properties

Workflow



EDA



Feature
Engineering



Modeling

Model
Selection



Model
Evaluation



Conclusions



01. Identify and fill Nan values with proportional values for each column

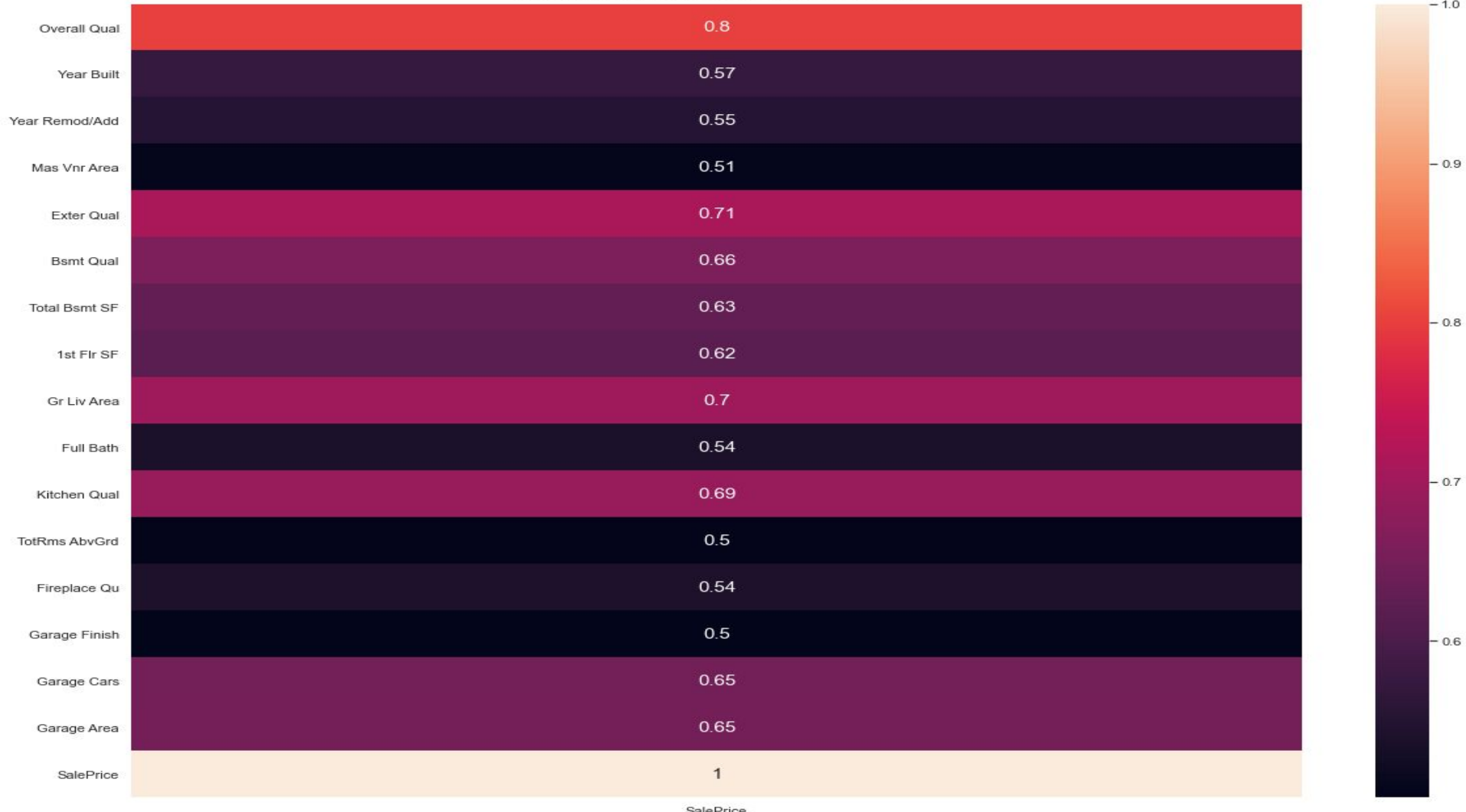
02. Replace Ordinal Categories with Integer

03. Create Dummies for Non Ordinal Categorical Values

04. Find Outliers and justify or drop them

05. Engineer features Based on Correlative Values

Features With Correlation Above .5



Engineered Features



Garage Score

Fireplace
Score

Kitchen Score

Size Score

Misc Score

Land Score

Quality Score

Model Metric - RMSE



BaseLine

79295

Linear Regression

23245

Ridge

22049

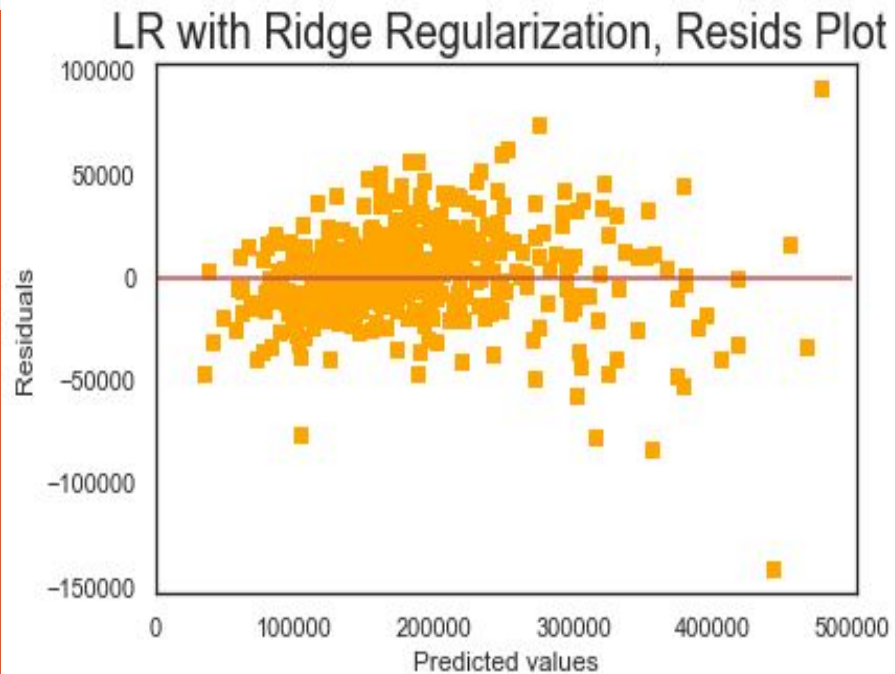
LASSO

22803

Ridge Residual Plot

Residual Plot Interpretation

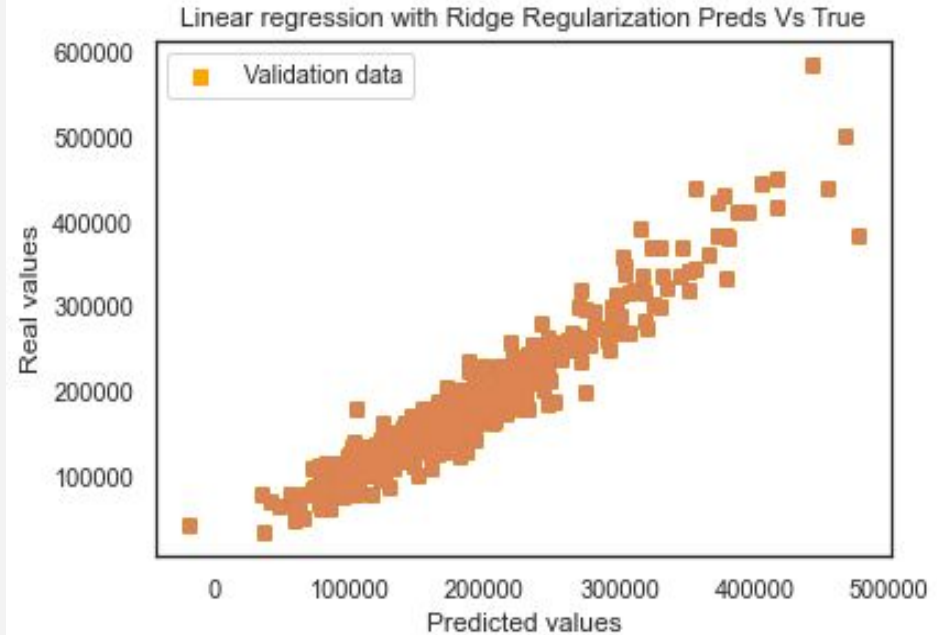
Mean of 0



True Values vs Predicted Values

True vs Predicted Plot

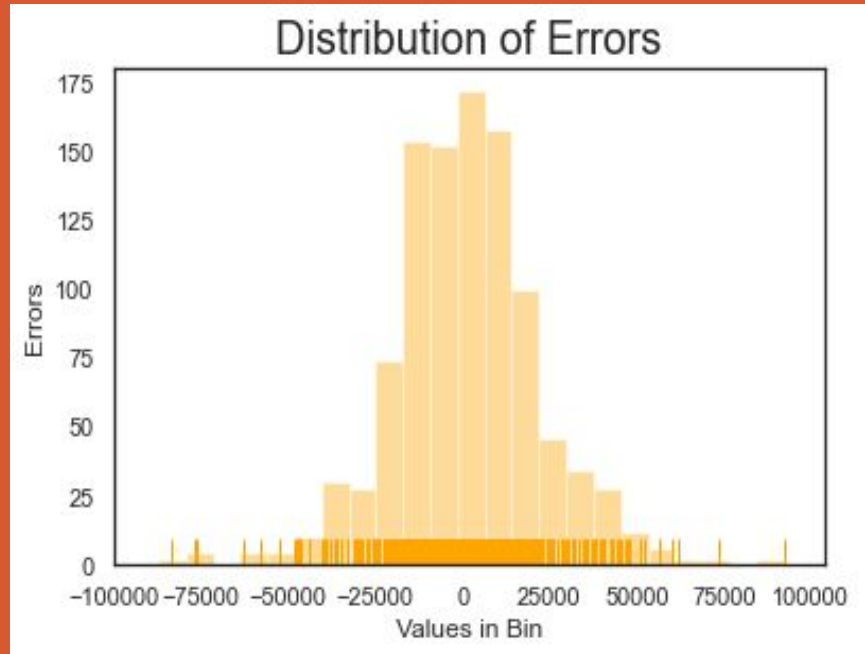
Homoskedastic -
variance of error is
equal.



Distribution of Errors

Error Distribution

Errors have an
approximately normal
distribution



Conclusions



- Using the data that we have, we can predict pricing accurate to within \$22k on avg.
- It is critical to leave out outliers in Gr Living Area, above 4k sq ft, these large home can skew values
- We need to pay particular attention to Quality metrics, S and Square footage . Also Garage is important

THANKS!

Do you have any questions?

youremail@freepik.com

+91 620 421 838

yourcompany.com

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RESOURCES

- Data Dictionary -
[http://jse.amstat.org/v19n3/decock/D
ataDocumentation.txt](http://jse.amstat.org/v19n3/decock/DataDocumentation.txt)