Determining Property Value in Ames, Iowa

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A little background...

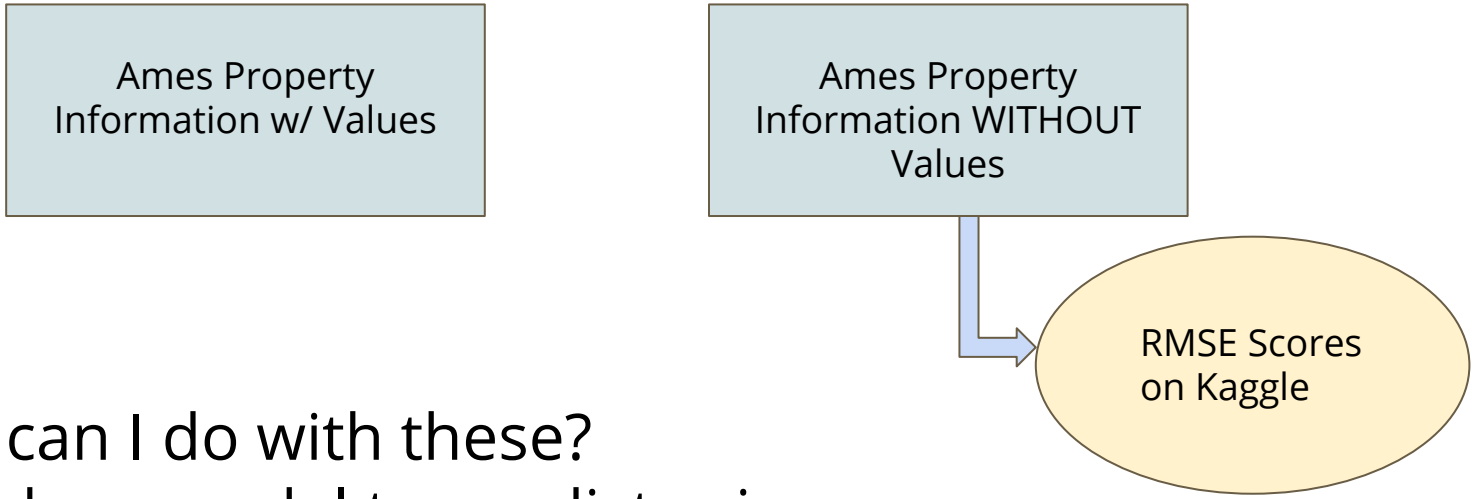
- **NOT** a real estate agent
- Data Science Student at General Assembly
- I have a property in Ames, Iowa I want to value and sell!

- Problem: How am I going to do that?
  - Predictive model

Overview

- Data cleaning
- Picking variables
- Model creation
- Predictions
- Using my model

What we have:

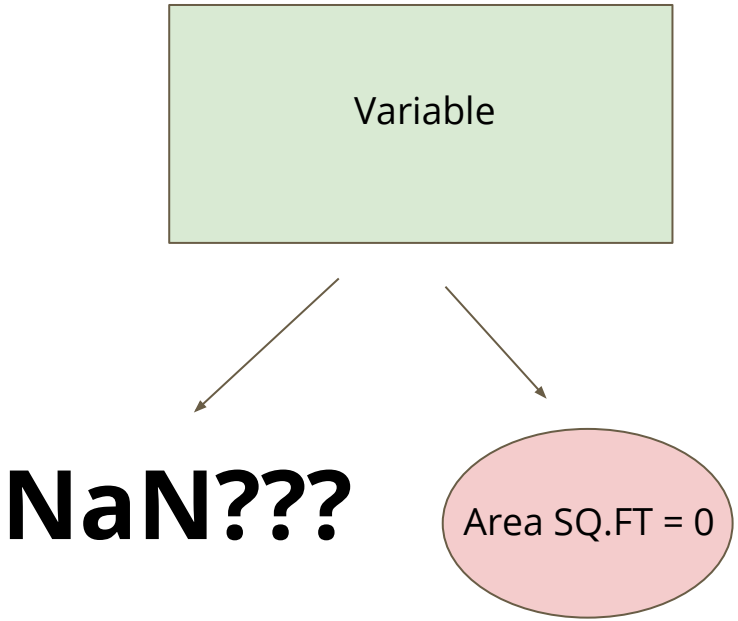


What can I do with these?

1. Make a model to predict prices.
2. Submit predicted prices for data without price values → RMSE Scores

1. Data Cleaning

- Assume NaN Cells = cells with blank space
- If Area SQ.FT = 0....
- Probably left blank because there wasn't a descriptive category because there is none!
  - Change to "NA"
- Applied similar mindset to all variables that had NaN values.
  - Ie. Pool, Misc Features, Garage Type, etc.



1. Data Cleaning (continued)

- Python's describe
  - Minimum priced property
  - Maximum priced property
  - Examined
- NaN Single Values → Median
  - 2nd Basement Types → Median = Unfinished
- Any strange outliers? Dropped.
  - Ie. Mansion sized property for only $200,000
- NaN critical sale price predictor? Dropped.
  - Ie. Basement w/o ANY information
- Post-Model Outliers
  - Identified and removed if beneficial

2. Picking Variables

- What are obvious predictors of a property's value?
  - Mindset: I'm buying a house, what are the things that I first notice?
  - Correlation Values
- Dummy-valued categorical data
- Single Linear Regression Model
  - Criteria: Variable Affects +/- $30,000
  - Added to list of variables

3. Created My Model

- Split data WITH sale prices into 1) Training Data 2) Testing Data
  - Predicted Prices vs. Actual Sale Price
- Target: Sale Price
- Optimization: LOTS OF BACK & FORTH
- Final %'s of explained variability of prices:

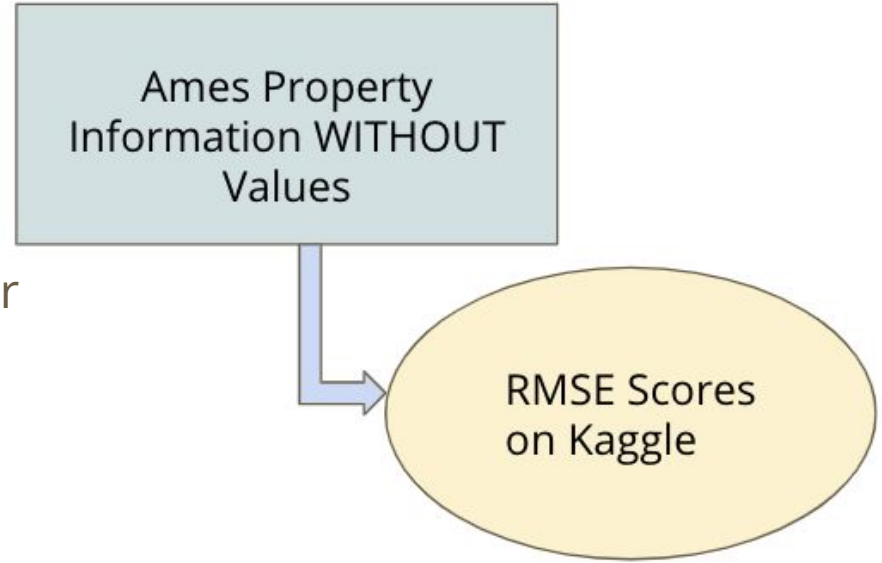
Training Data
94% Variability Explained

Testing Data
92% Variability Explained

Splitting Training Data (5 Parts)
92% Variability Explained (Mean)

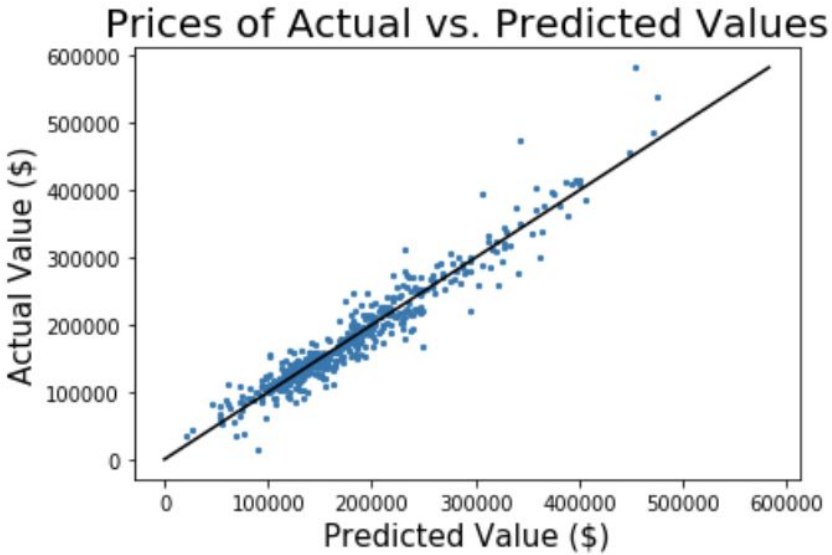
4. Predictions

- Using model
  - Made predictions for
- Submission on Kaggle
- Examine RMSE Scores
- Lower RMSE Scores = better model



Caution to Note

- Big chunk of data in $100,000 - $300,000 range
- Not many higher value properties to model



Sources

https://stackoverflow.com/questions/49065837/customize-the-axis-label-in-seaborn-jointplot

https://stackoverflow.com/questions/34001751/python-how-to-increase-reduce-the-fontsize-of-x-and-y-tick-labels/34004236

https://stackoverflow.com/questions/29813694/how-to-add-a-title-to-seaborn-facet-plot

https://stackoverflow.com/questions/28638158/seaborn-facetgrid-how-to-leave-proper-space-on-top-for-suptitle

https://blog.goodaudience.com/jupyter-notebooks-the-real-way-to-use-them-5b4417ea77ba

https://stackoverflow.com/questions/28914078/filter-out-rows-based-on-list-of-strings-in-pandas

https://stackoverflow.com/questions/14463277/how-to-disable-python-warnings