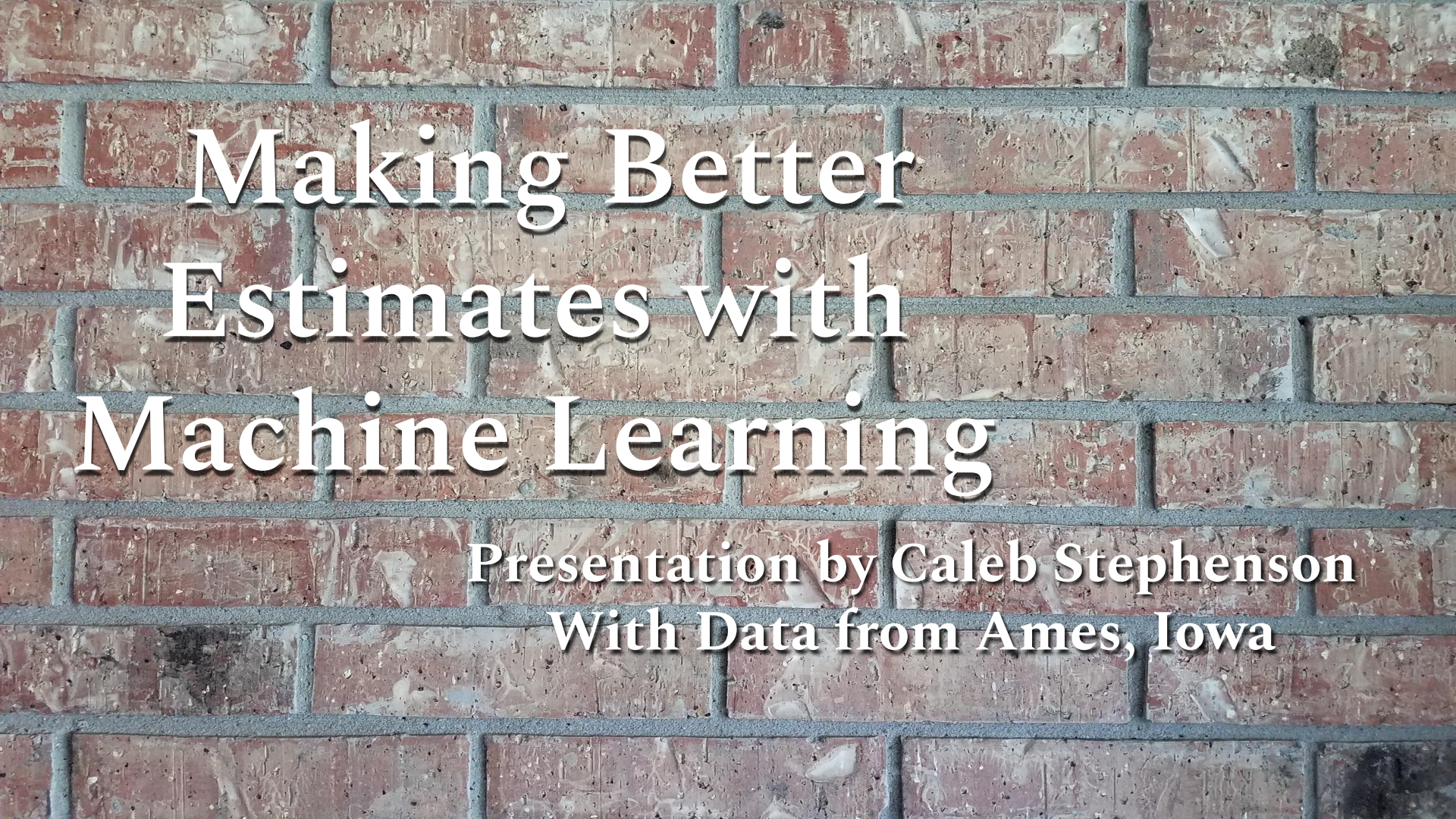

Making Better Estimates with Machine Learning
Presentation by Caleb Stephenson
With Data from Ames, Iowa

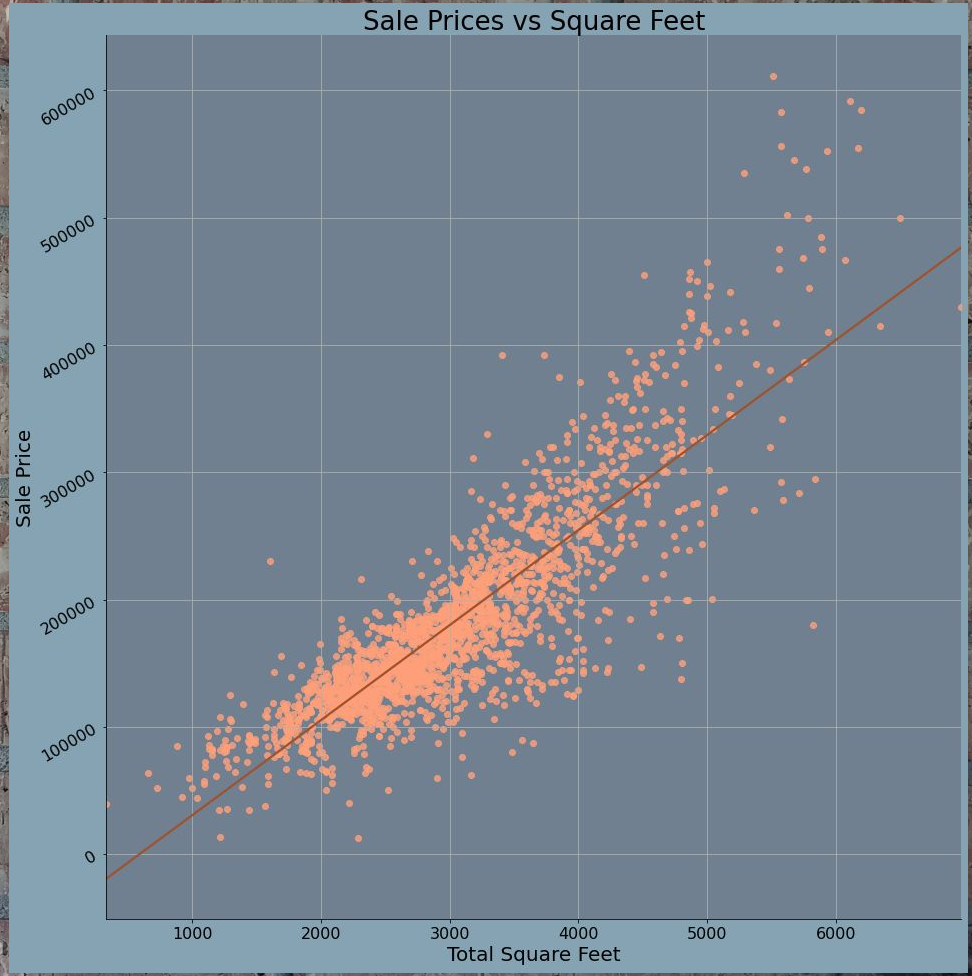
What goes into a home price?

- Measurable values: Simple To Estimate
  - Square Footage
  - Number of Bathrooms
- Categorical Values: Harder to Estimate
  - Utilities
  - Roof Style
- Qualitative Values: Very Hard to Estimate
  - What do humans think about the house?

The Simple Model:

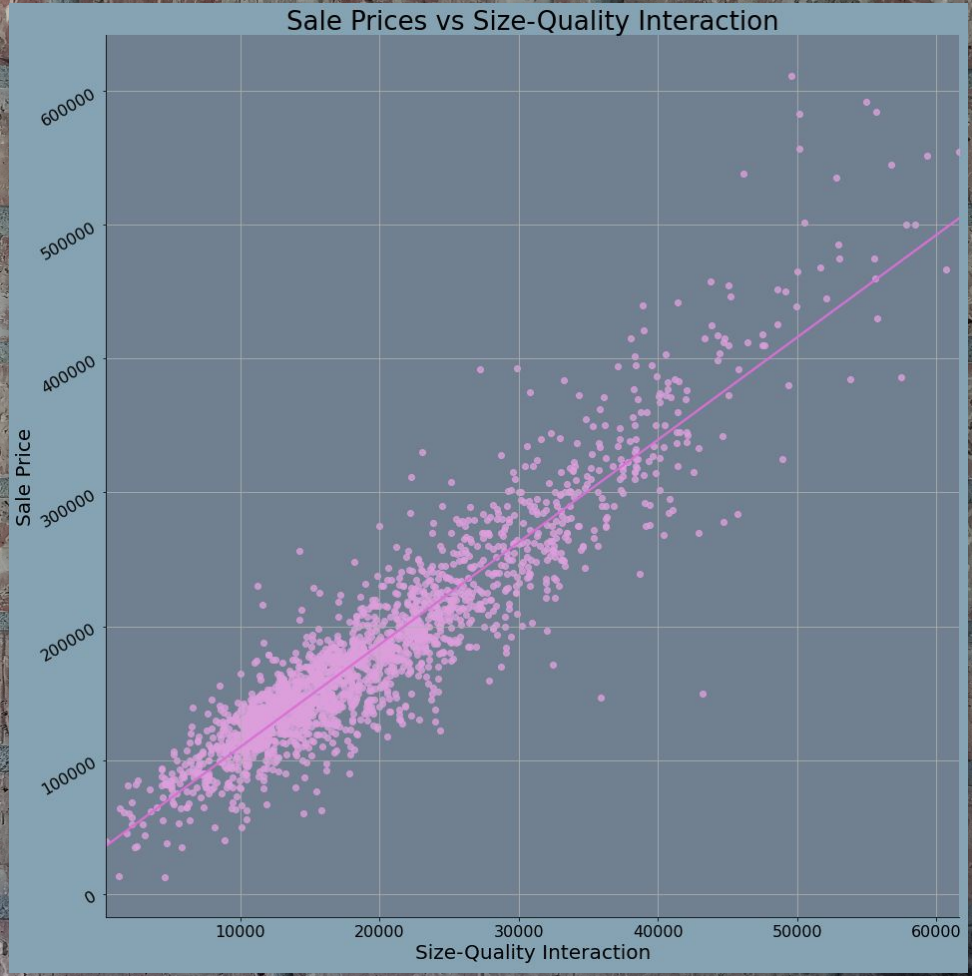
A common way of reporting home prices is by “Dollars per Square Foot”.

This gives a very rough estimate of what to expect.



The First Step:

Taking into account some qualitative data noticeably improves the forecasting ability of the model.



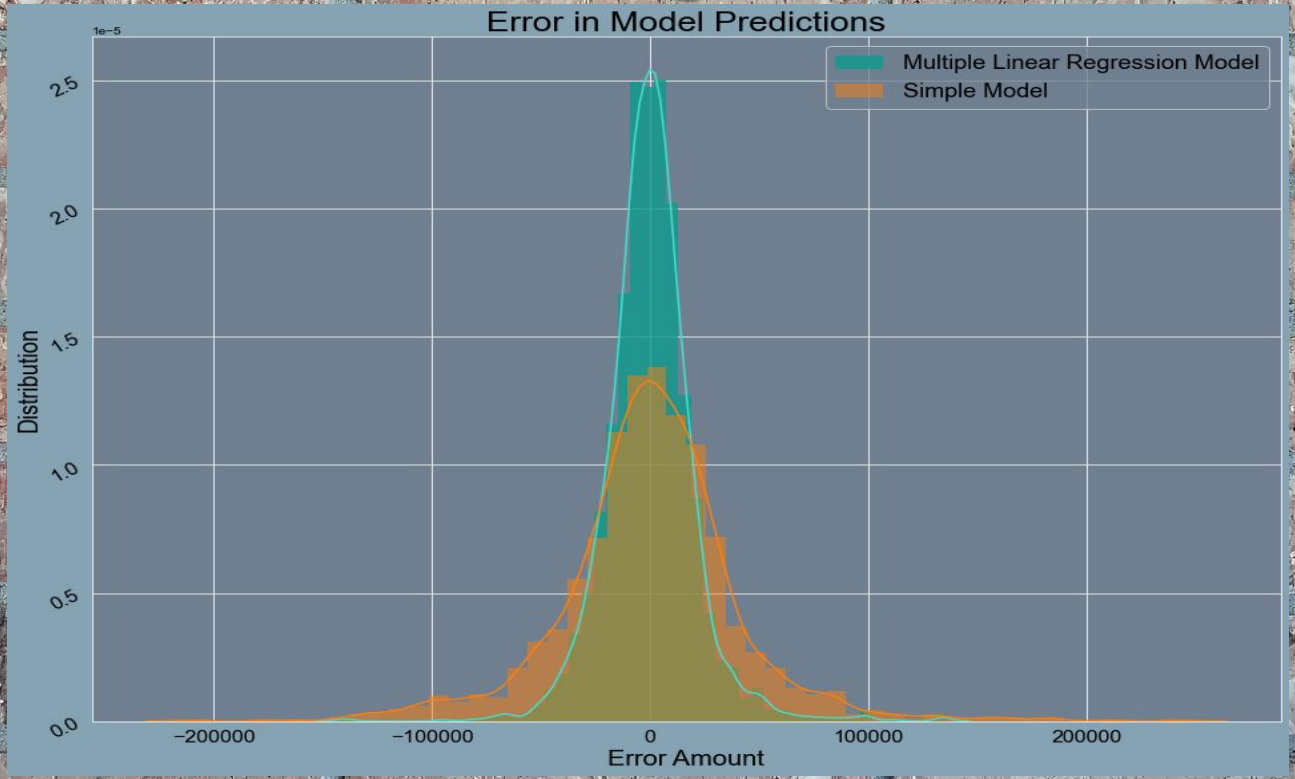
Machine Learning:

- More information means more complexity.
- It becomes impractical, if not impossible, to calculate by hand.
- We need to analyze the data with algorithms!

Example:

- House ID: 624
- Actual Sale Price: $187500
- Prediction based on size only: $212450
- Machine Learning Prediction: $183624

Machine Learning Reduces Error



Recommendations:

- Simple models, easily calculable by hand, don't capture the complexity of home sale prices.
  -
- The "human factors" are important - and computers can, to an extent, account for it.
  -
- Machine learning is necessary to take into account the huge variety in homes.