

An aerial photograph of Ames, Iowa, showing a dense residential and commercial area with numerous houses, streets, and some larger buildings. The image is slightly faded to allow text to be overlaid.

Greetings from **AMES, IOWA**

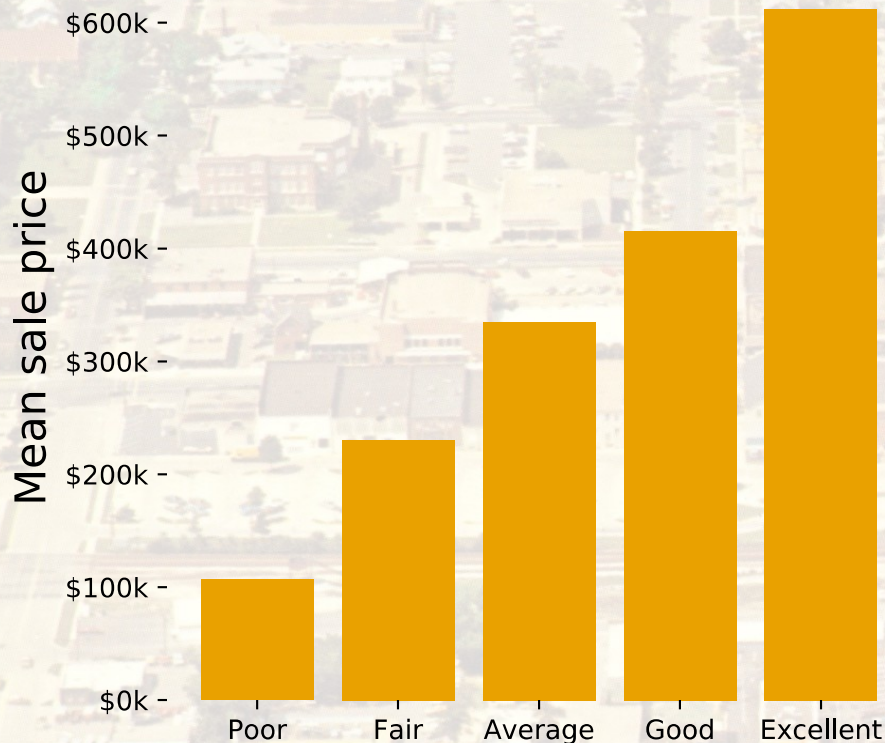
Can we predict home sale prices?

A case study from Ames, IA

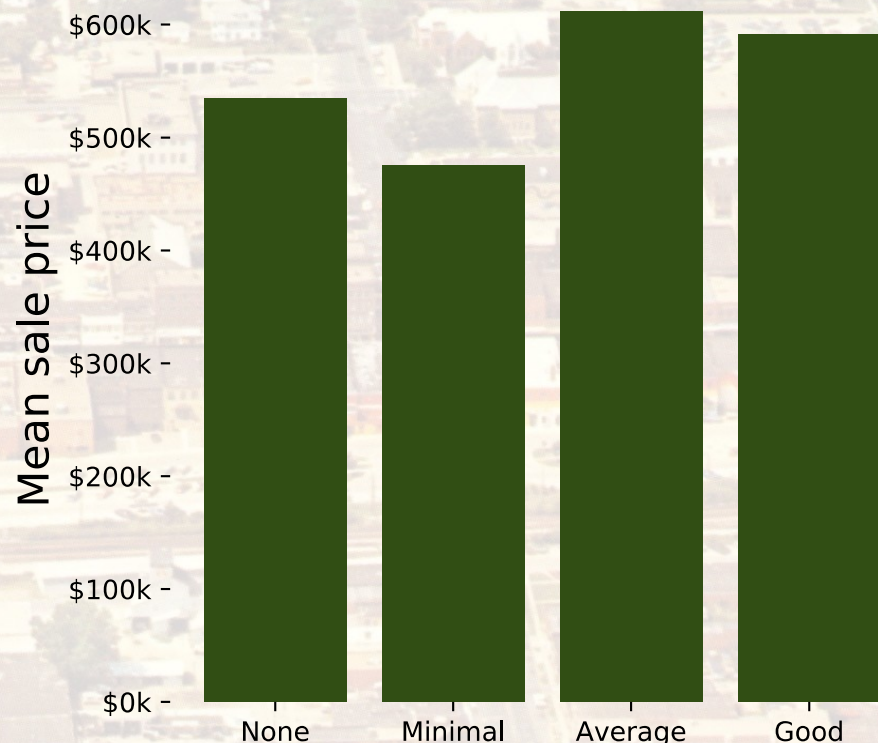
Alexander Klapheke • DSI Project 2 • April 10, 2020

Some data correlate better
with sale price than others.

Heating system quality



Amount of basement exposure

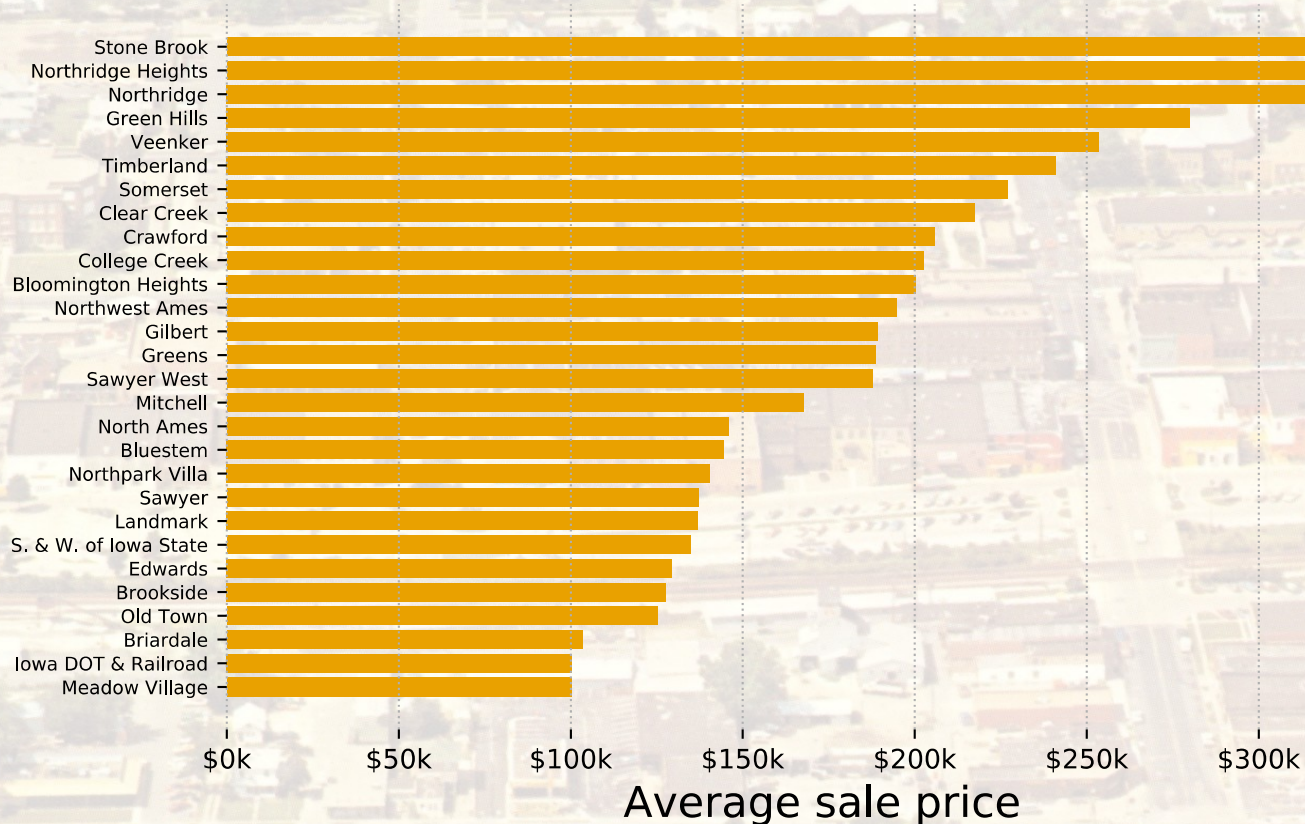


Among the strongest effects:

Ceteris paribus, raising...	...by...	...raises average sale price by:
Lot area	1 acre (43,560 ft ²)	28.1%
Above-grade living area	100 ft ²	74.8%
Finished basement area	100 ft ²	19.1%
No. full baths in basement	1	18.4%
Overall quality score	1 (out of 10)	9.3%

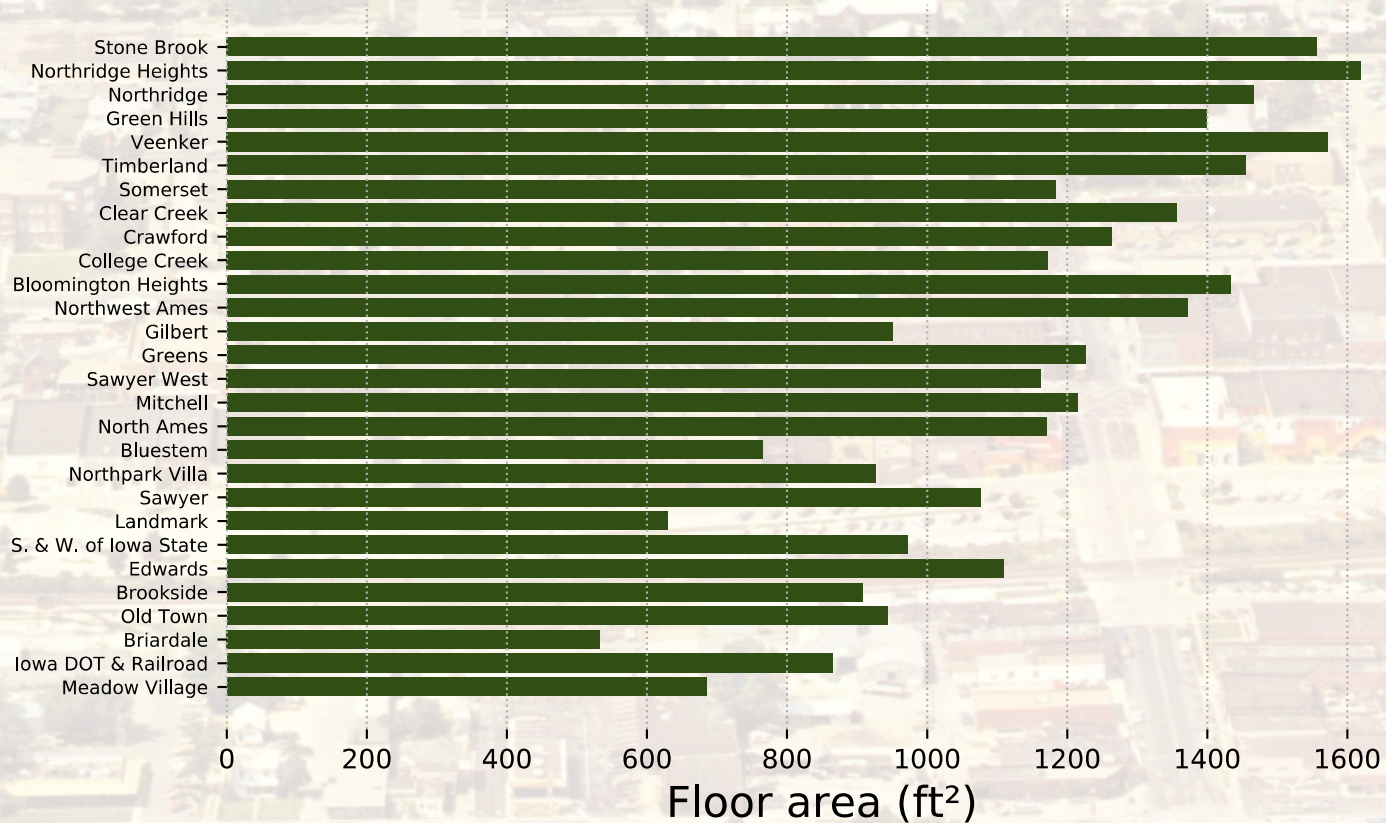
Although location (location location)
has a big impact on sale price...

Sale price by neighborhood



...it correlates with other features,
so the model doesn't consider it.

First-floor area by neighborhood



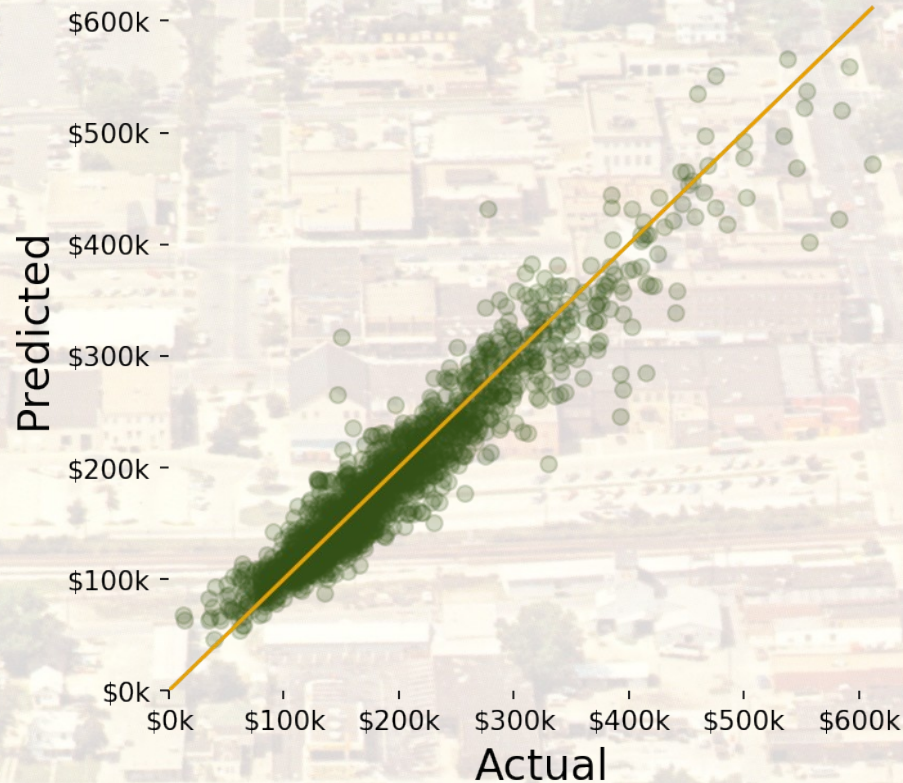
The full model accounts for...

- **Significant years:** remodeled, sold
- **Floor area:** living (basement & non-basement), first-floor, screen porch, deck, total lot size
- **Room counts:** all rooms, kitchens, basement baths, garage car ports
- **Quality scores:** overall, exterior, basement, heating

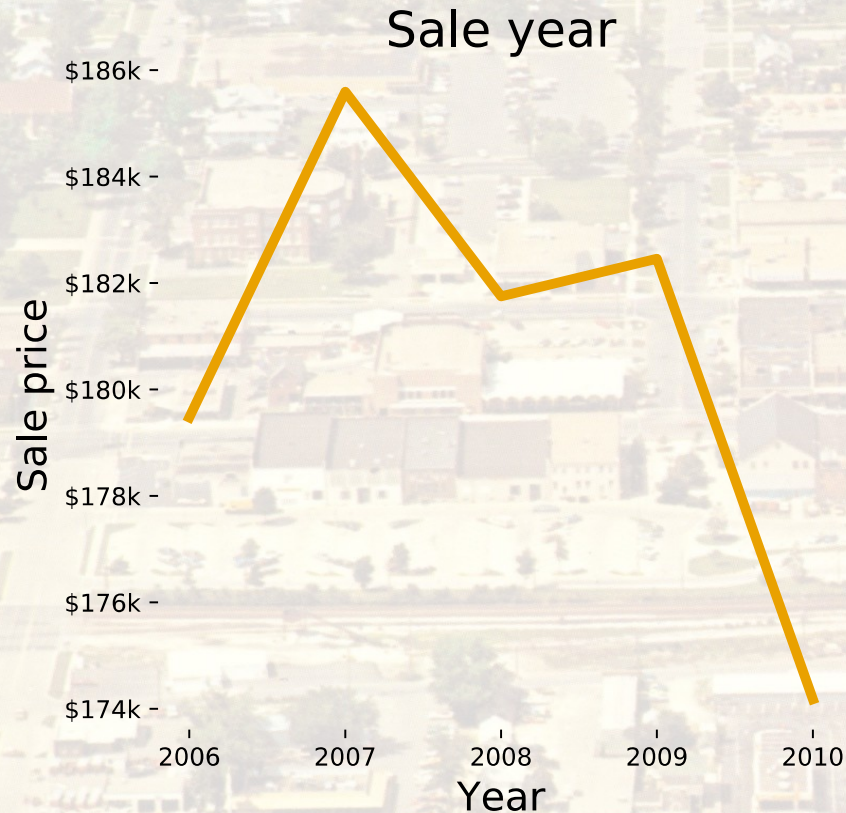
If we don't know a value, use the mean of the others.

...and explains 86% of the variation in sale price.

Model-predicted sale prices



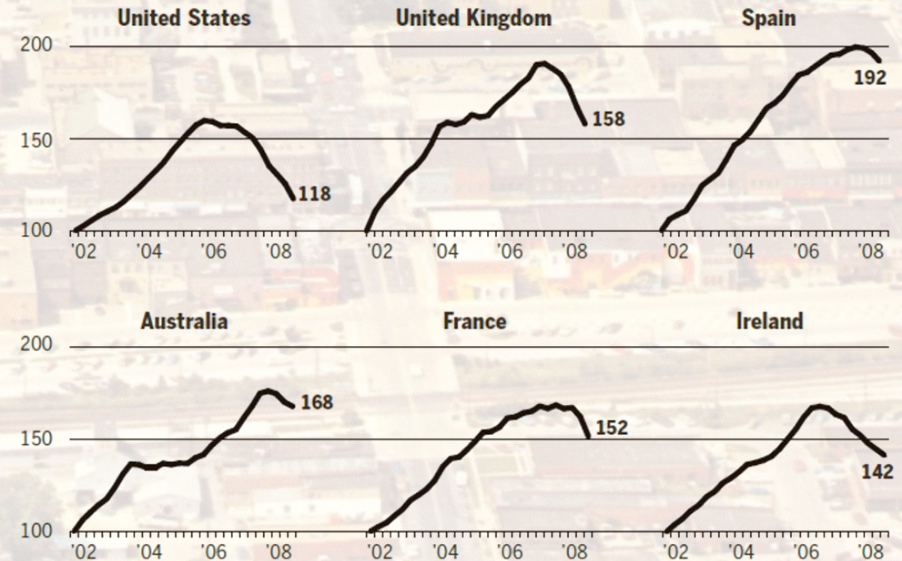
Due to the '08 crisis, sales in successive years decrease by an average of 3.5%.



House Price Appreciation in Selected Countries, 2002-2008

The United States was one of many countries to experience rapid house price growth

2002 INDEX = 100



SOURCES: Standard and Poors, Nationwide, Banco de España, AusStats, FNAIM, Permanent TSB

Graph from the Financial Crisis Inquiry Commission

If we want to generalize this model...

...to other cities:

- Neighborhood is not considered, but;
- “Quality” factors like “overall condition” (1–10) must be calibrated to other assessors’ judgments.

...to other periods:

- The “sale year” factor must be adjusted so as not to consider the '08 subprime crisis.

If you want to add value to a house:

- **Add rooms:** recently-remodeled homes and those with more finished floor area sell for more
- **Finish the basement**
- **Add a screen porch or deck**