Housing Investment:
The Ames Situation

Timeliness and Excellence *at a Premium (cash only)*

The goal:
Which House Will become your Home

Background: *The Butterfly Effect*

Location: The Reiman Gardens Ames, Iowa: Botanical Garden.
Aggressor: Botanist Society
Type of attack: Illegal seizure/theft/or destruction of Lepidopterist property
Time until destruction: 1 week

The Lepidopterist in need: TBook (no relation)

New home for massive sculpture 12 ft² area base. Fast.
No questions on requested

TBook's masterpiece (left) is being confiscated in seven days.

Lepidopterists vs Botanists
        Why?

Ames population is split:
        25% | Botanist
        25% | Lepidopterist
        50% | Undecided

Deliverables Requested

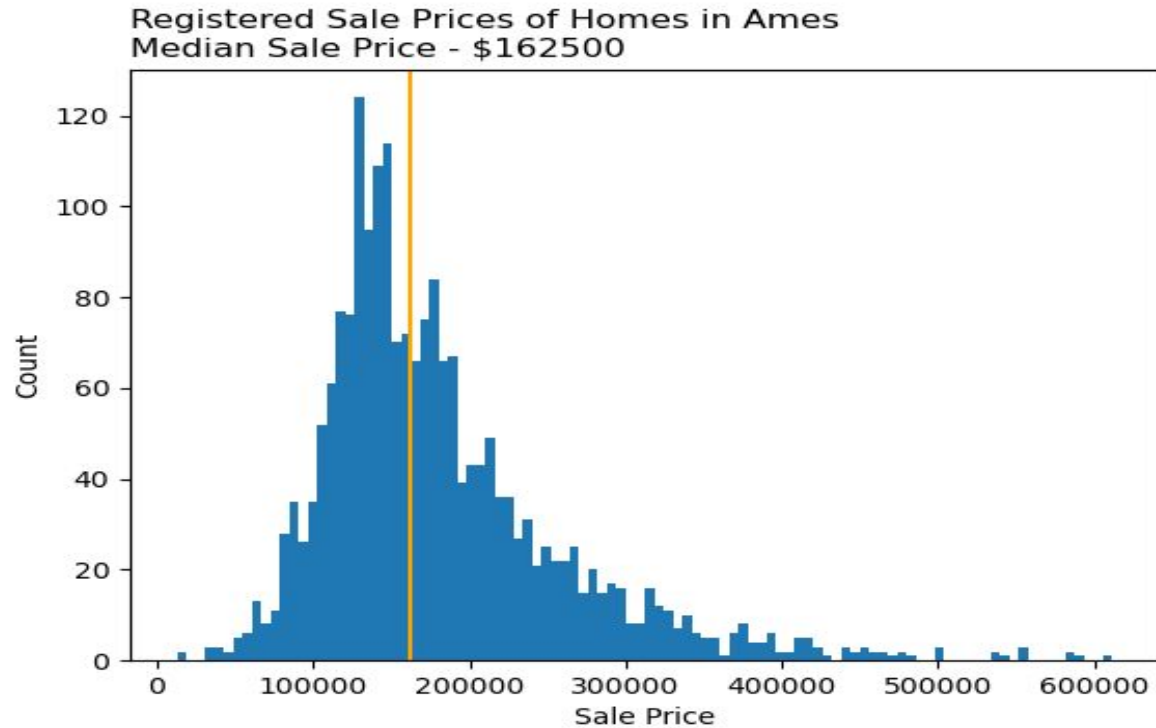**A list of homes** for the statue which provide the following:
- Ample space to keep butterfly out of sight
- No loss in equity for the Lepidopterist Society

TOP SECRET WARNING!
- Peace will not last between the Botanists and the Lepidopterists if and harm comes to this statue.
- The Botanists must not know!
- Must ensure the price offered is too good to refuse

$162,500

Registered Sale Prices of Homes in Ames
Median Sale Price - $162500

$162,500

Median Sale Price of Homes in Ames, Iowa

- 93% of houses sold are in **low to medium density** neighborhoods
- The median **garage size** is 473 ft^2
- Garages of sold homes in Ames are usually attached
  - Attached - 63%
  - Detached - 28%

Modeling Selection

And other considerations

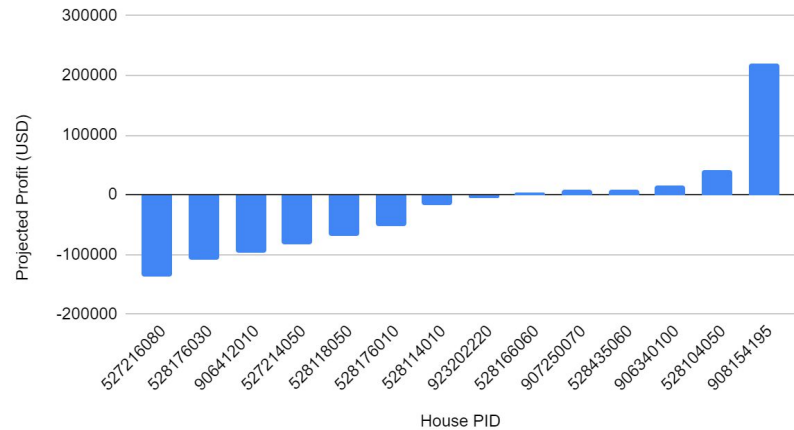| Model type	R^2 scores (train/test)	Comments
Linear Regression	64% / n/a	- A simple model but rejected - Many features simply do not impact price linearly (i.e. bathrooms)
KNeighbors Regressor	81% / 80%	- Scale the values. - Cross Validating to use all known data optimally - Not good enough
RidgeCV Regression	90%	- Powerful tool for fitting regression model and cross validating R^2 scores - Highest score, Acceptable RMSE: $ 24560

Deliverables:

Method to process and clean housing data

Model performs better than baseline and several other model types

Houses meeting specifications and the difference between modeled price and historical price

Sources:

https://www.worldatlas.com/cities/ames-iowa.html

https://en.wikipedia.org/wiki/Ames,_Iowa