Housing Prices in Ames

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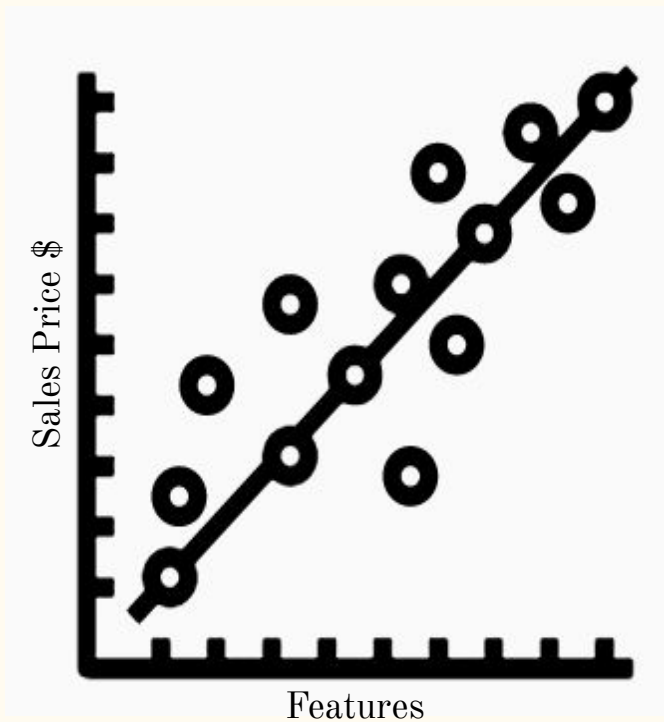Group 4: John, Hong Yee, Sarah, Yew Tong

Background

Home sellers usually turn to remodeling their homes to increase its sales price.

However, few large-scale remodeling projects can actually add equity value to the home, to realize profit when the house is sold

Problem Statement:

How can you best increase the value of your home?

How to determine the features?

Fit different linear regression models to the dataset

The success of a model will be determined by the root mean squared error (RMSE) value.

RMSE is a measure of how accurately the model predicts the sales price. Lower values of RMSE indicate better fit.

Using the best model, determine which features affects the sales price and which doesn't

Ames Iowa Housing Dataset

Duration

2006 - 2010

81

features

2051

entries

5

categories
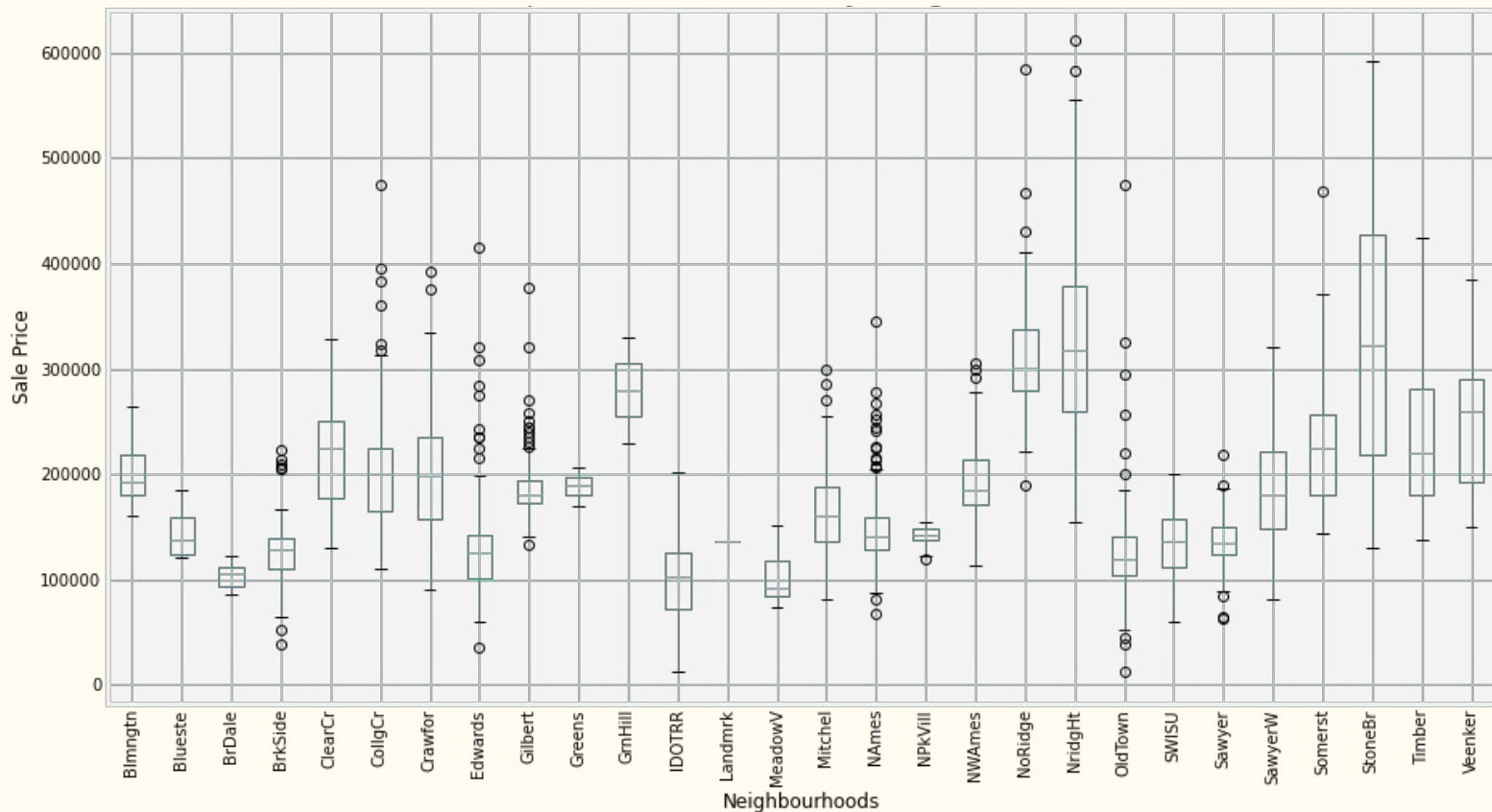

location

environment
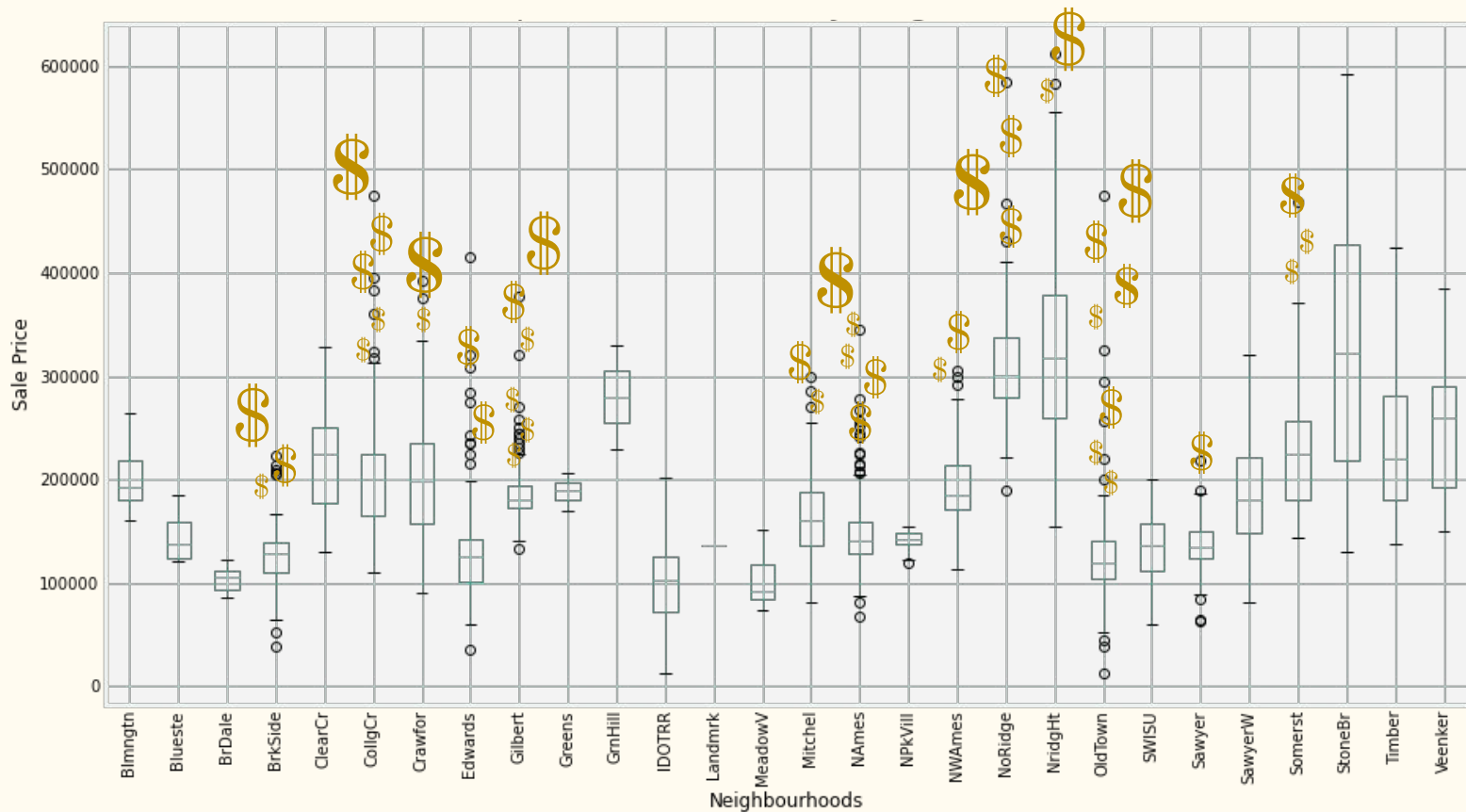

date

size

house attributes

Analysis

Boxplot of Sale Prices by Neighbourhoods

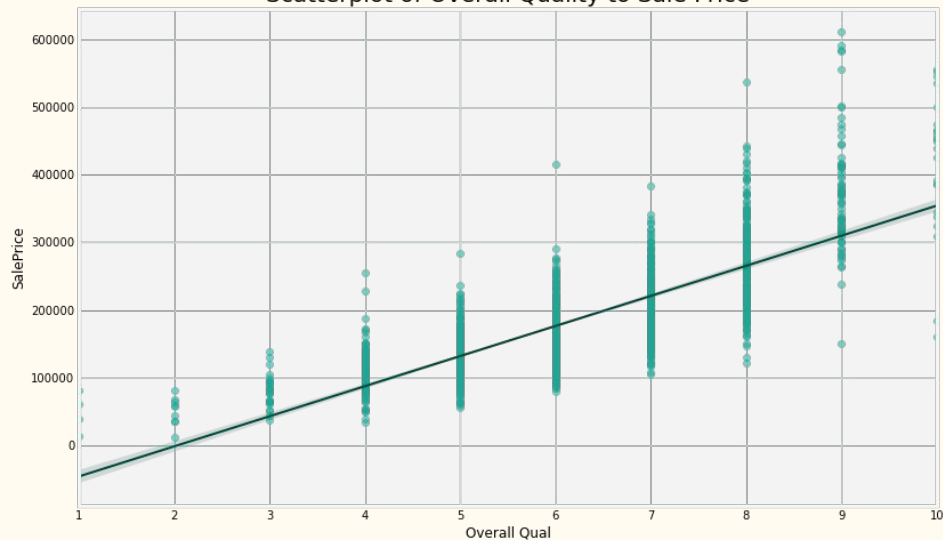# Boxplot of Sale Prices by Neighbourhoods

With computing magic:

~ High-value Spaces

~ Quality

High Correlation with Sale Prices
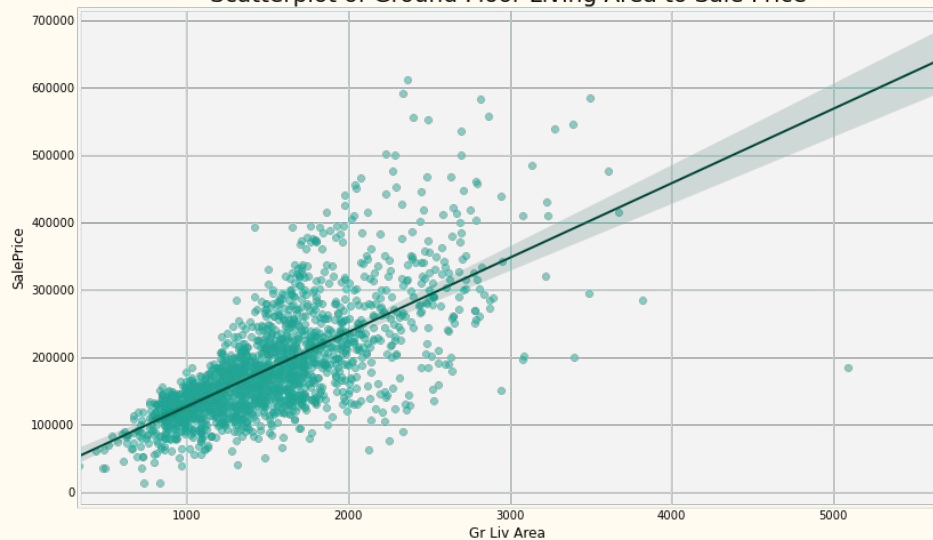
Quality and Spaces

Scatterplot of Overall Quality to Sale Price

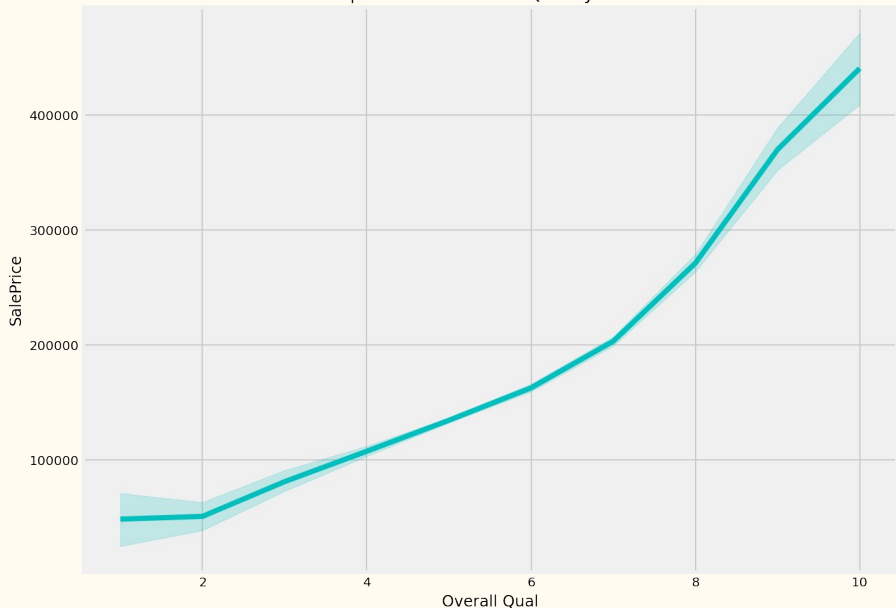Scatterplot of Ground Floor Living Area to Sale Price

Findings and recommendations

- Overall Quality of property
- Ground living area of property

Overall Quality

Relationship between Overall Quality and Sale Price

Findings

- Improving the overall quality of the property by 1 grade leads to a change in average sale price by approximately $10,000. Your property quality should at least be a 9 for a reasonable value

- Home buyers consider the Overall quality and condition of the property. Renovations takes time and money

- Home buyers are likely to pay more for a property that is move in ready

Overall Quality

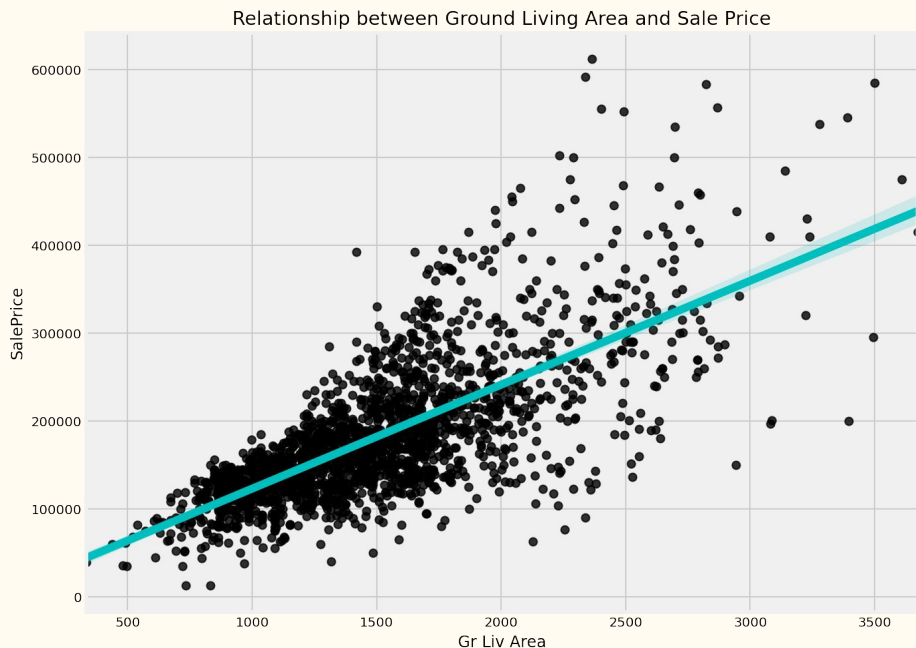How quality checks are conducted

✓ Walls and ceilings
✓ Insulation and ventilation
✓ Roof and attic
✓ Foundation and floors
✓ Garage and driveway
✓ Heating and cooling systems
✓ Plumbing and water pipes
✓ Electrical systems and wires
✓ Appliances

DONE RIGHT
HOME INSPECTION

Recommendations:

● Basic maintenance of homes in Iowa cost around $2500. On average, one should do a home maintenance once every 10 to 15 years

● Ensure no leaks in pipes or roofs within property, electrical wiring is not exposed. Water and power in working condition

● No cracks on walls, ceilings, floors, window etc

● Property can be properly secured

● Move in ready

http://donerighthomeinspection.com/what-we-inspect/index.asp

Ground Living area of property

Relationship between Ground Living Area and Sale Price

Findings

- From our model, increasing the ground living area potentially increases your real estate value by $49 per SF

- This is the main area homebuyers look at when viewing your property

- What homebuyers are after is living space. For the same neighborhood, the higher the living space, the more valuable the price of the property

Ground Living area of property

Recommendations:

- Look at your unutilized lot area and consider extension projects to increase your living space

- Consider enclosing your balcony and extend your living space. Open balcony is not considered part of living area

- Adopt open concept design to give homebuyers comfortable space when viewing your property

Limitations

Predictions Not Exact

- Average house price: about $180,000
- Model error (RMSE): about $30,000
- This is almost **20**%, so while the model can give a good estimate, **don't rely solely on it**
- If you want to sell (or buy), hire a professional evaluator.

Other Factors

- Aesthetics of your house
- Proximity to other things (food, schools) not considered.
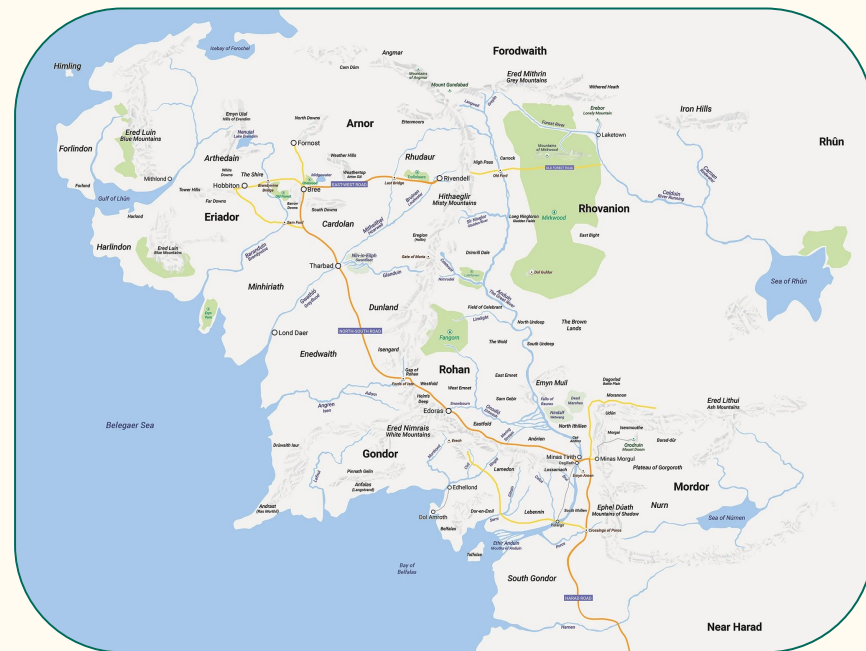- Some factors are difficult to quantify as a price

There may be easier ways to increase your house's value, this is on a case by case basis.

Predictions may not account for some features

Houses Outside Ames

- Important features still affect price in a similar way
- Using this model in other areas:
  - **<u>Cannot predict actual price</u>** well since land/labour costs are different
  - May be able to compare relative price of 2 houses in the same neighborhood

Model may not work well in other areas

Conclusions

Key Takeaways

Best ways to increase value:

- Increase quality
- Increase living area

If you want to sell/buy:

- Consult professionals
- Other features may affect price

Q & A