Modeling Ames Property Prices with Zoning and Area

Presented by Nikhil Lonberg

Generalizing a model to other cities is hard...

- Neighborhoods and ZIP codes lose meaning

- Data is collected differently

- Climate and geography vary property features, building materials, and building standards

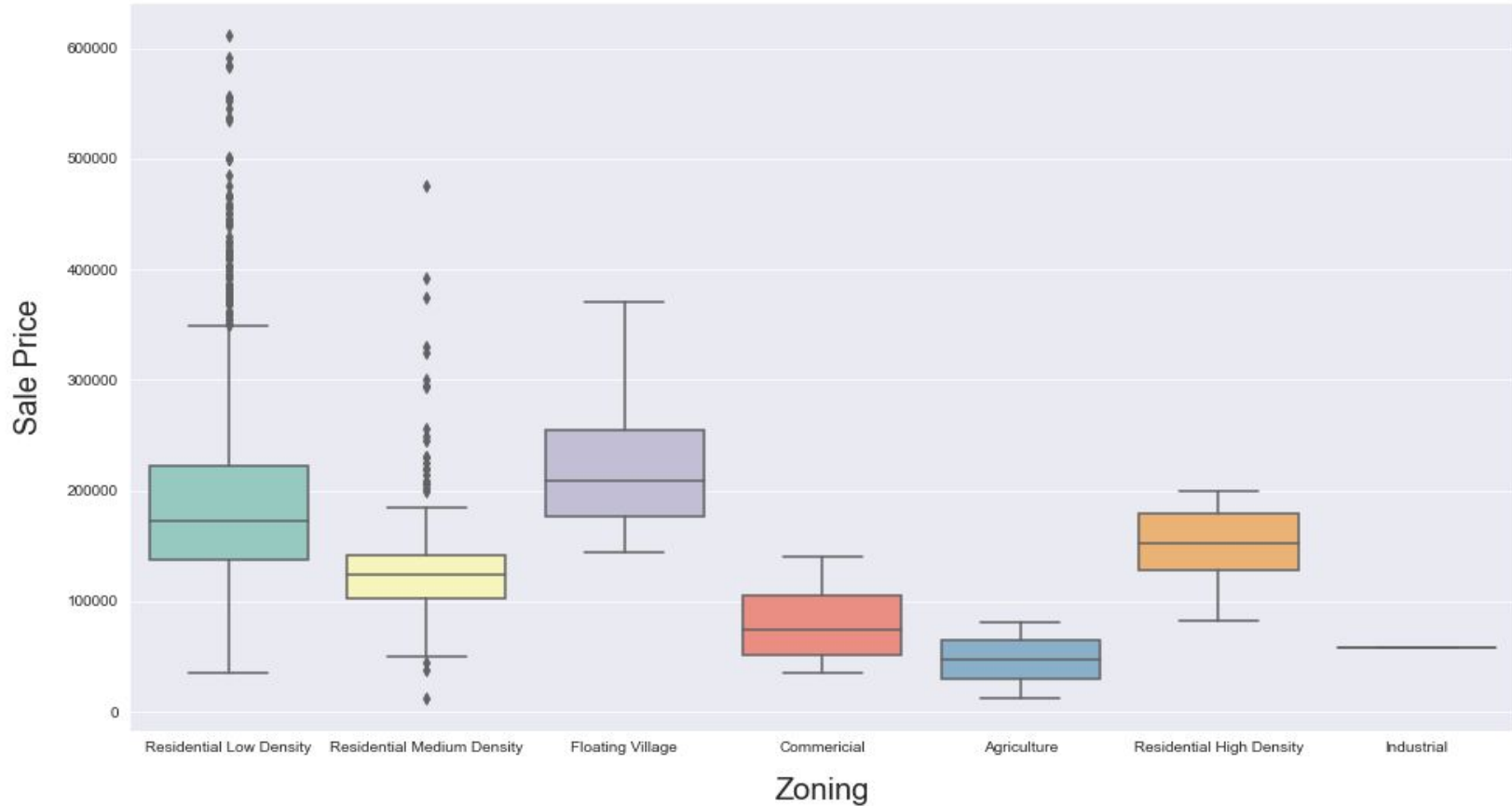- Square footage and zoning are general and descriptive features

Questions:

Do property area characteristics and zoning ordinance predict sale price?

What are the impacts of property area and zoning on sale price?
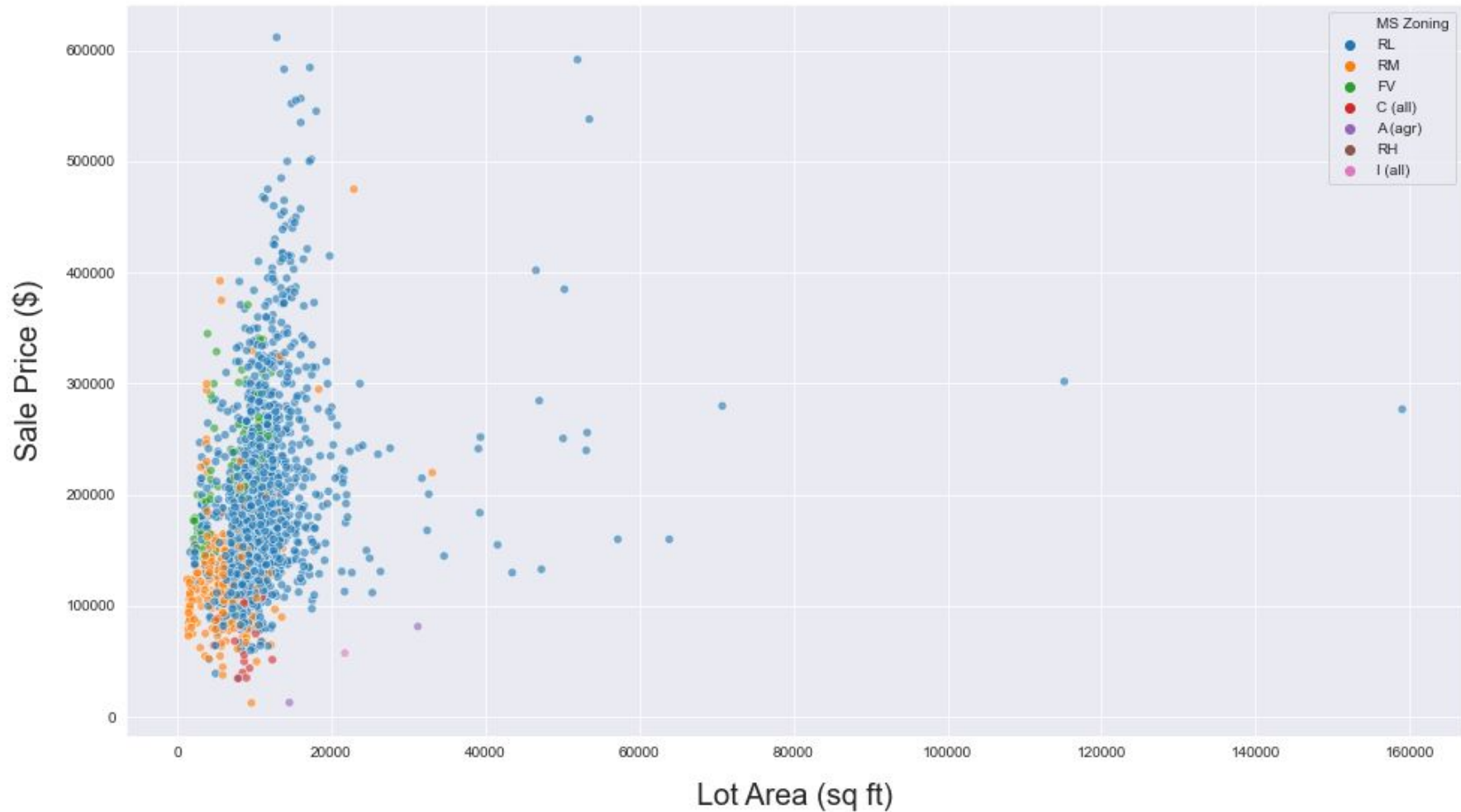
Does zoning affect price?
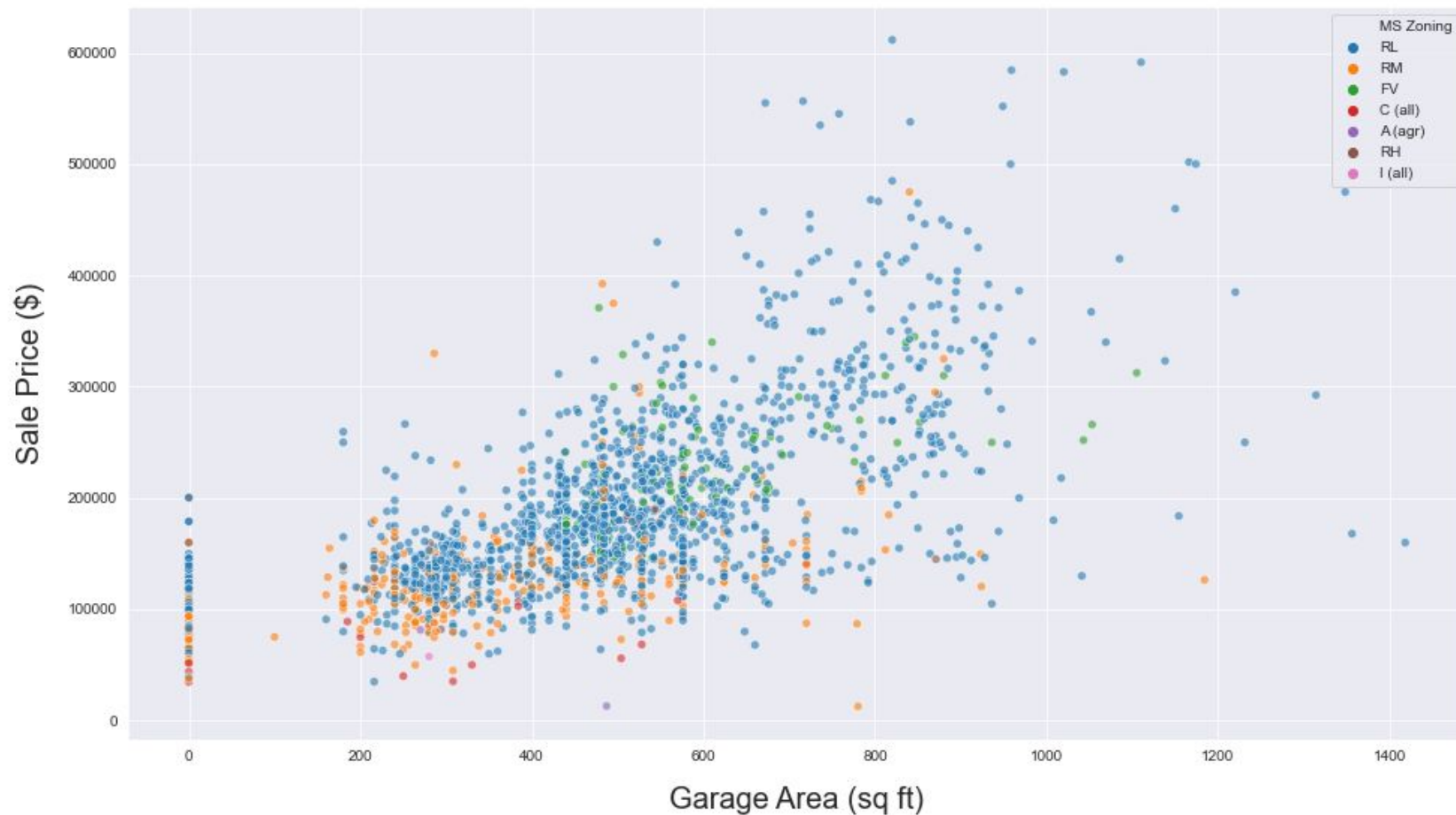

Sale Prices by Property Zoning

Above Grade Living Area and Sale Price by Zoning
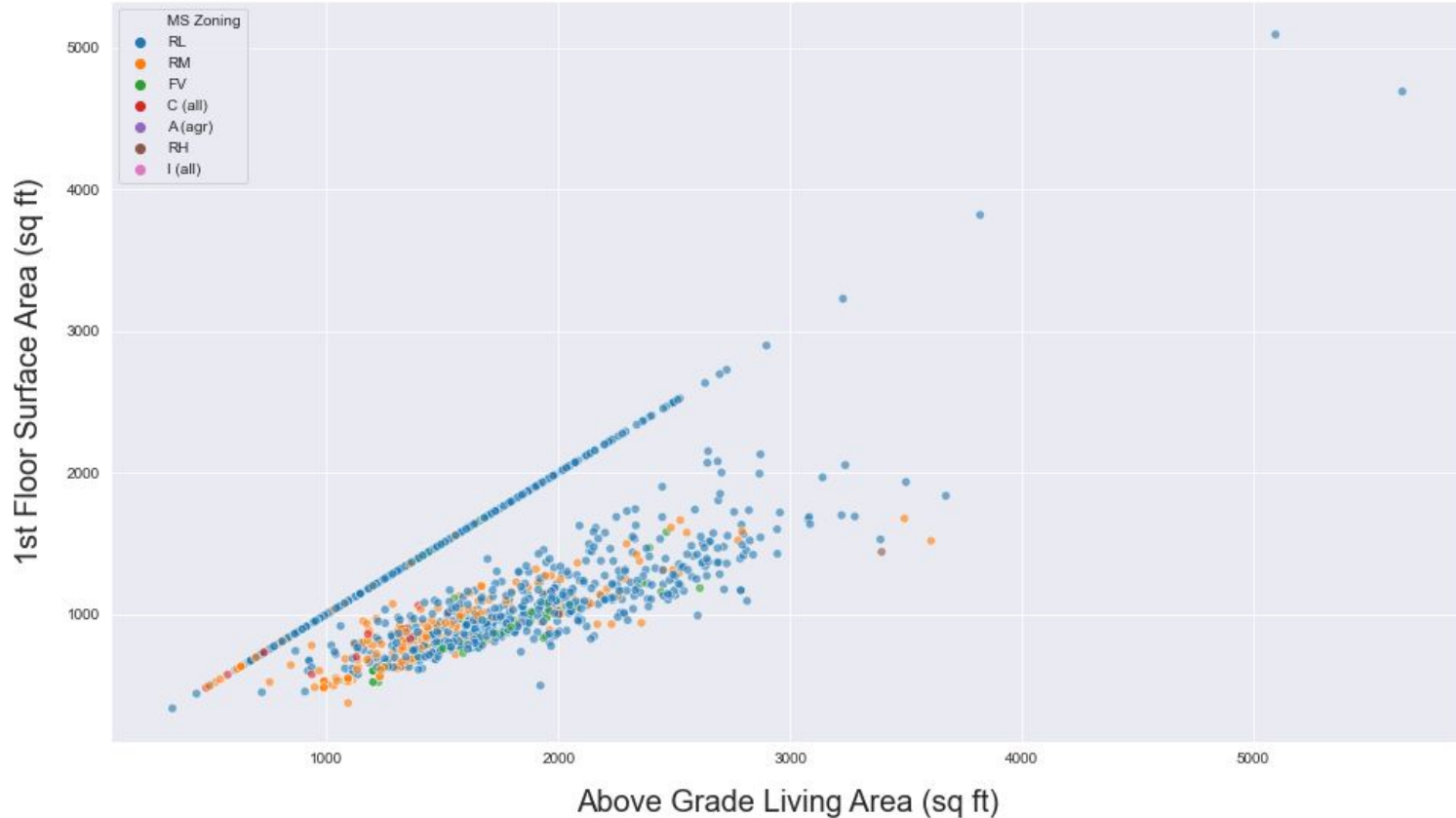
Lot Area and Sale Price by Zoning

Garage Area and Sale Price by Zoning

Multicollinearity and measures of area

Above Grade Living Area and 1st Floor Surface Area by Zoning

Do property area and zoning predict price?

- Final Features: Garage Area, Livable Area, Lot Area, Zoning

- Final model performance

  - **R2:** 0.61

  - **RMSE:** 49847

  - **Cross Validation:** 0.63

- No, property value and zoning alone cannot predict price in Ames.

- The model is likely generalizable but too inaccurate to be useful

How do zoning and property area impact price?

- Increase in lot area by one square meter results in an increase in price by $0.50.

- Increase in garage area by one square meter results in an increase in price by $75.

- Increase in living area by one square meter results in an increase in price by $130.

Ranking impact impact of zone on price:

1. Floating Village
2. Low Density
3. Medium Density
4. High Density
5. Commercial
6. Industrial
7. Agricultural

Challenges of predicting price with zoning

- Zoning ordinance does not always respond to spatial economy

- Gentrification

- NIMBYism

- More intentional and specific zoning ordinance would predicting price with zone easier.