Property Sales Predicting

By Max Browning & Becky Joseph

Why is this important?

- While the assessed value is a strong predictor of a property's sales price, other variables will play a factor.
- We wanted to create a tool that takes multiple factors of a property to predict sales price.
- Personally, Max is looking to purchase a house within the next year, so exploring property prices is a timely project.

Data to Explore:

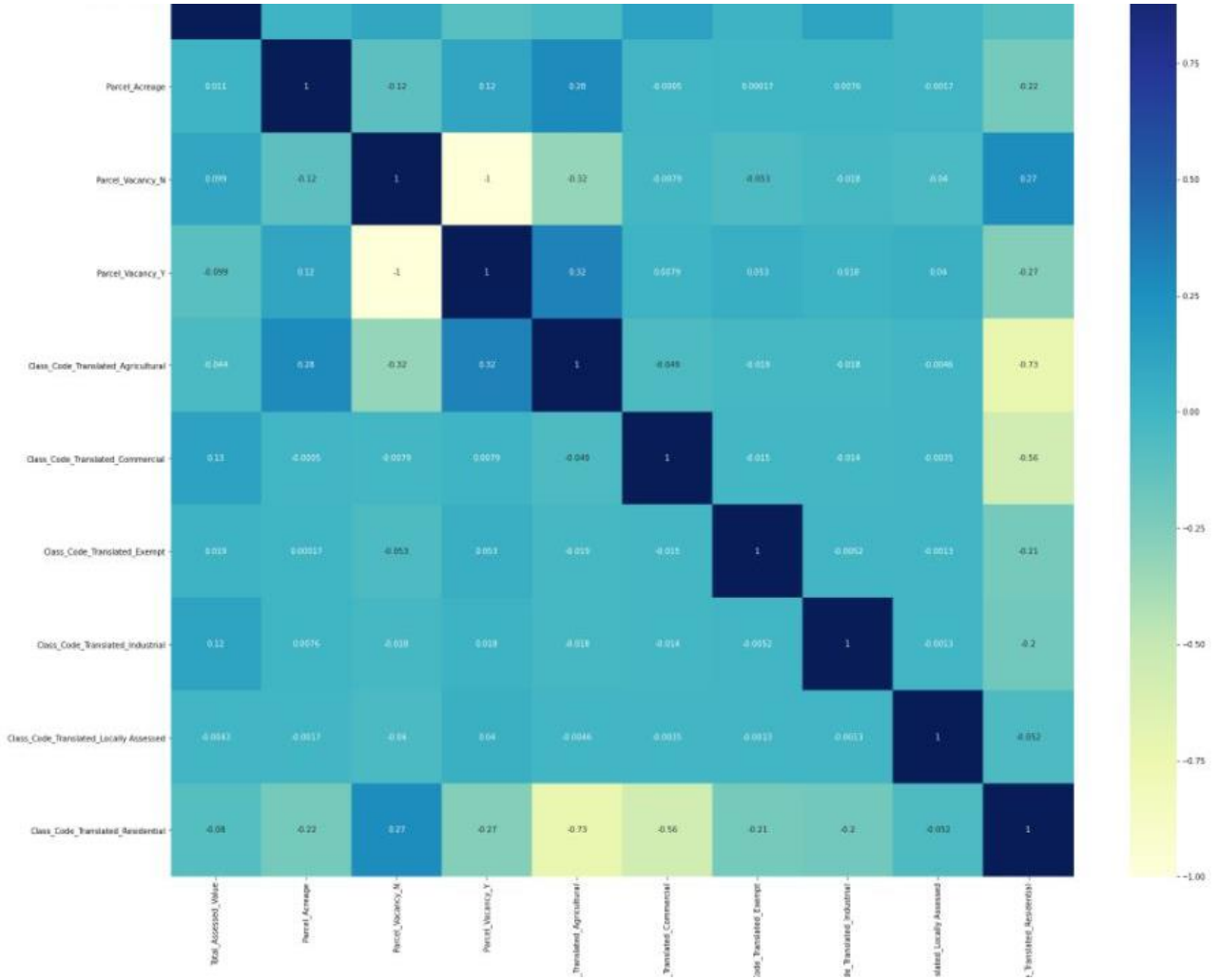
- Indiana's Public Data Utility to explore **Property Sales Disclosure Form Data** from 2020
- Limitations:
  - Way too much information.
  - Two-stage user input process meant some data was incorrect.
    - Example: Zip codes outside of Indiana.
- Cleaned data directly on Microsoft Excel and through Pandas.
- Confirmed data cleanliness with SQL uploads.

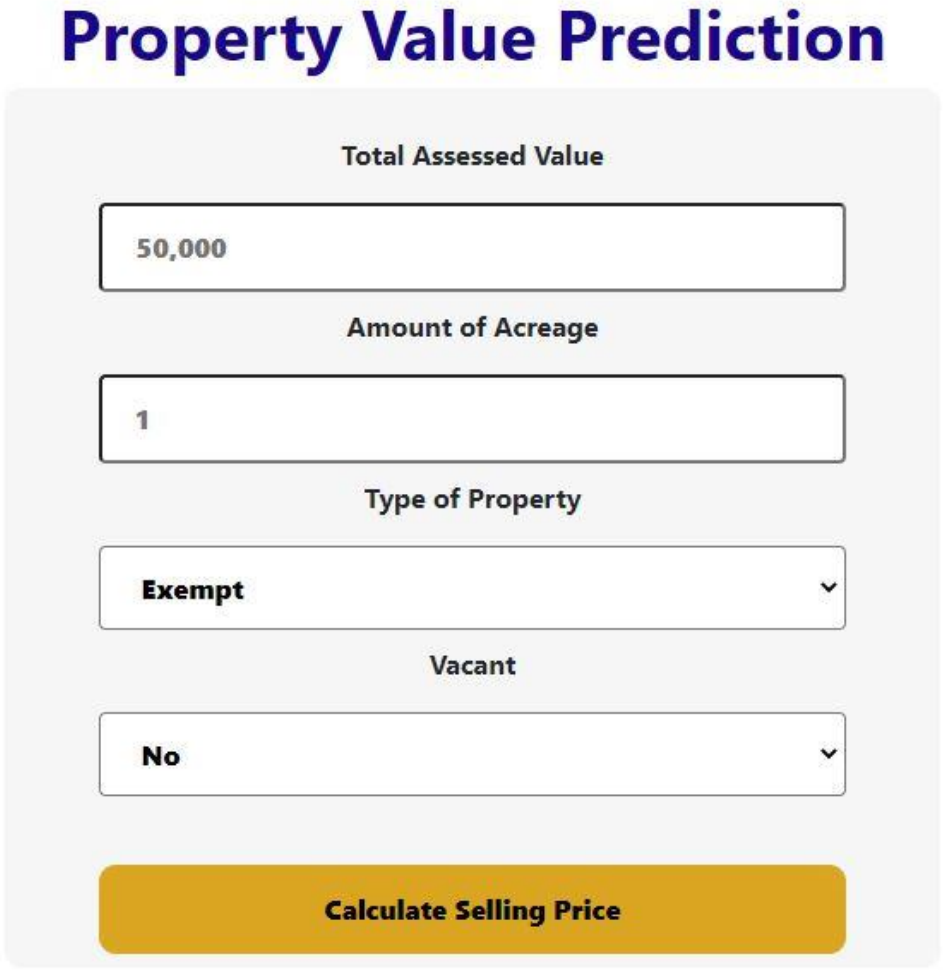
Factors to Consider:

- **Assessed Value**: Value determined by third party assessor.
- **Acreage**: Total area of land contained within the property lines.
- **Vacancy Status**: Is the property currently occupied by another?
- **Class Code**: Primary use of property.
  - Agricultural
  - Commercial
  - Exempt
  - Industrial
  - Locally Assessed
  - Residential

Learning about our **Machine Learning:**

- Selected features.
- Hot encoding for qualitative features.
  - Vacancy Status.
  - Class Code.
- Scaled our data.
- Split data: 80% train, 20% test
- Max depth: 5
- Pickled model and scalers for deployment.
- Deployed machine learning model to take user inputs in index.html form through app.py.



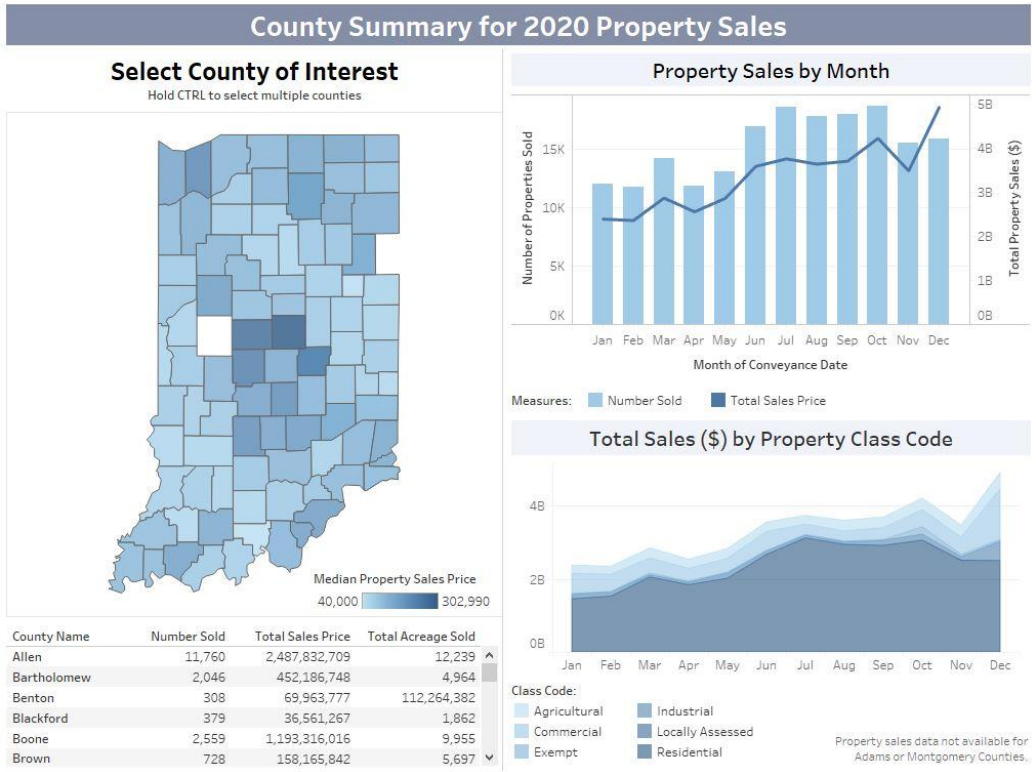


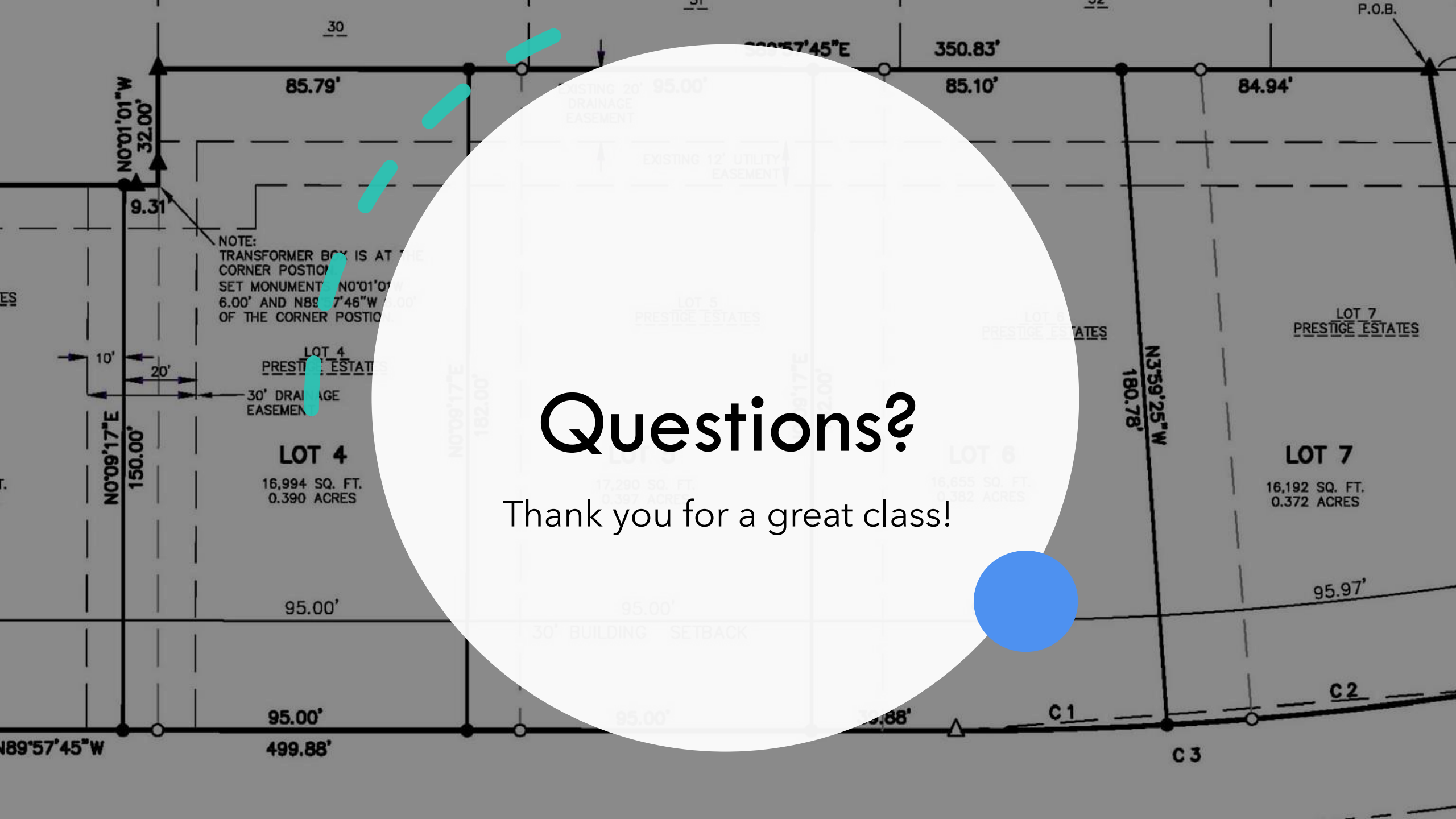
Challenges:

- Choosing the machine learning model best suited for our data.
  - Tried multiple linear regressions first.
  - Chose random forest regression.
- Deploying machine learning model to allow for user input.
- Creating a dashboard that clearly showed County-level data without being cluttered.

What's Next?

- Feature exploration in Tableau.
- Resources tab to allow user to filter full data list.
- Provide property sales most similar to user input.
- "What is an acre?" visualization.





Questions?

Thank you for a great class!