



Property Sales Predicting

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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.

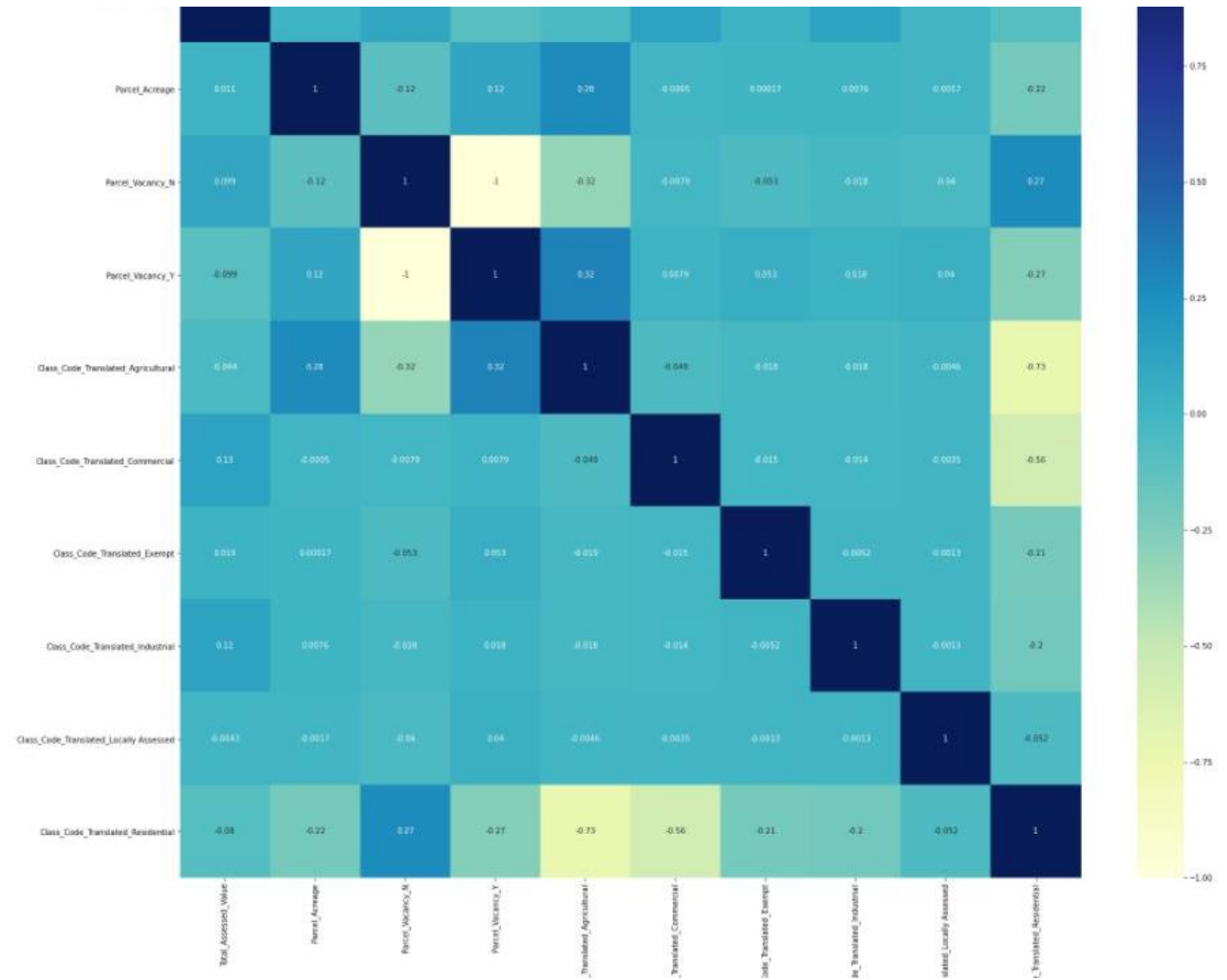


Factors to Consider:

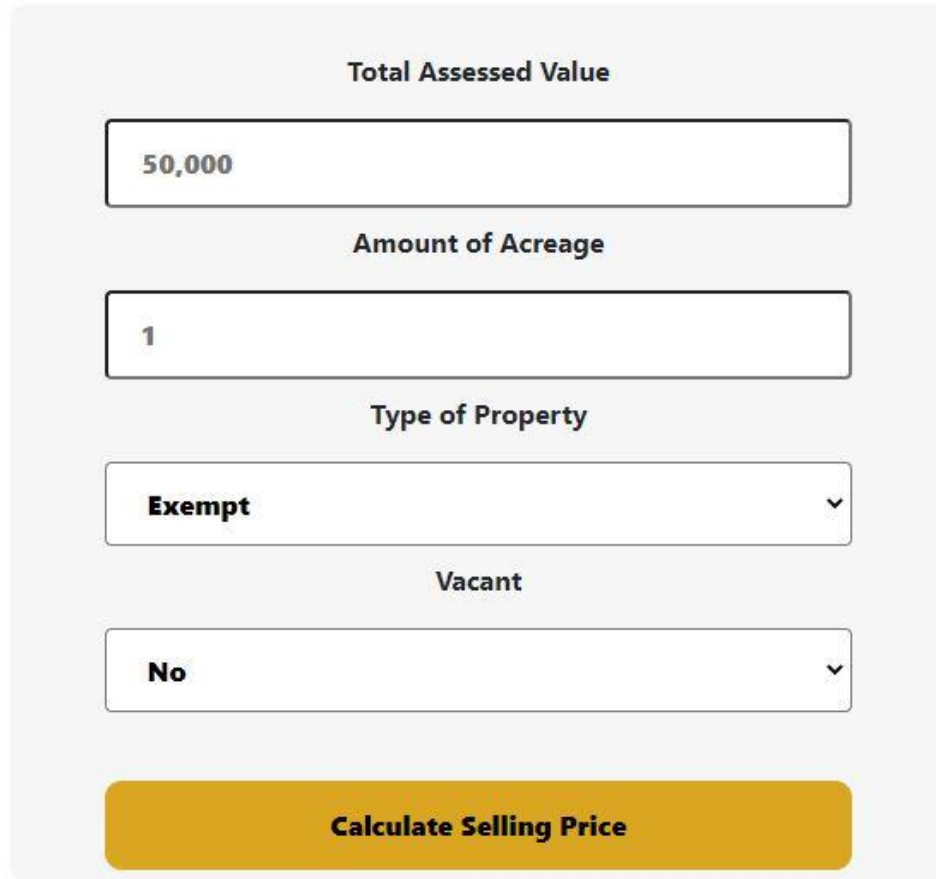
- **Assessed Value:** Value determined by third party assessor.
 - **Acreage:** Total area of land contained within the property lines.
 - **Vacancy Status:** Is the property currently occupied by another?
 - **Class Code:** Primary use of property.
 - Agricultural
 - Commercial
 - Exempt
 - Industrial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



Property Value Prediction



A screenshot of a web form titled "Property Value Prediction". The form is set against a light gray background. It contains four input fields, each with a label above it: "Total Assessed Value" (text input with "50,000"), "Amount of Acreage" (text input with "1"), "Type of Property" (dropdown menu with "Exempt" selected), and "Vacant" (dropdown menu with "No" selected). At the bottom of the form is a large orange button labeled "Calculate Selling Price".

Total Assessed Value

50,000

Amount of Acreage

1

Type of Property

Exempt

Vacant

No

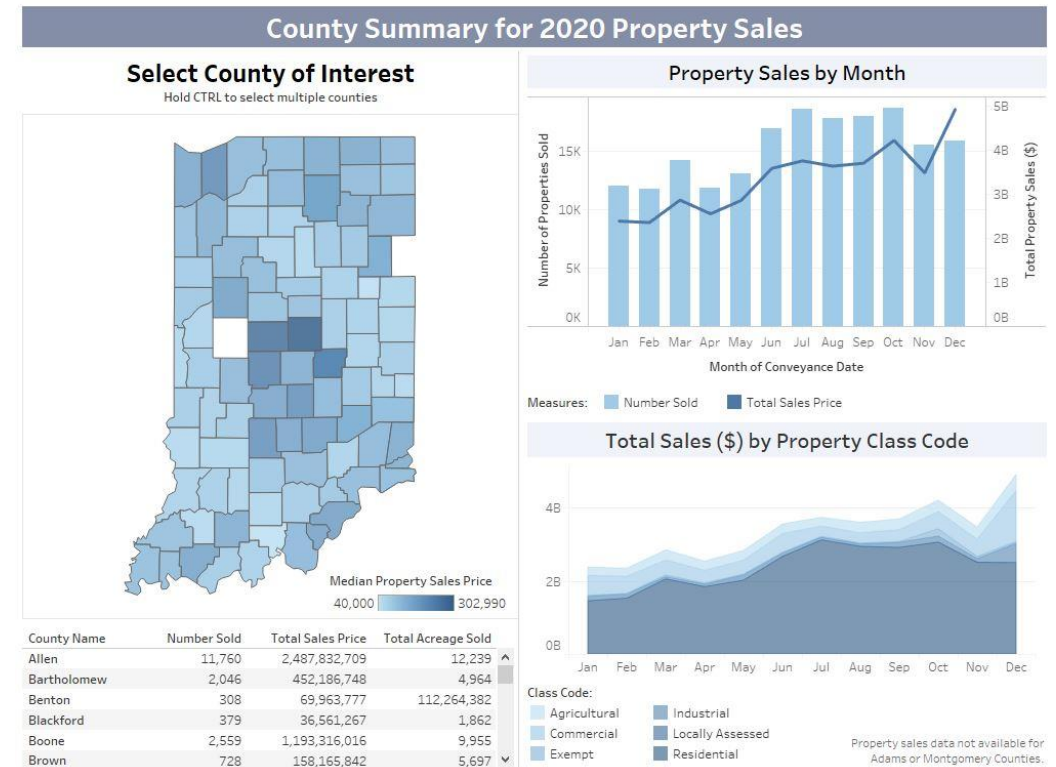
Calculate Selling Price

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.



A survey map of several lots, including Lot 4, Lot 5, Lot 6, and Lot 7. Lot 4 is 16,994 sq. ft. (0.390 acres). Lot 5 is 17,290 sq. ft. (0.397 acres). Lot 6 is 16,655 sq. ft. (0.382 acres). Lot 7 is 16,192 sq. ft. (0.372 acres). The map shows various boundary lines with bearings and distances, such as N0°01'01"W 32.00', N0°09'17"E 150.00', and N3°59'25"W 180.78'. It also indicates easements like a 20' drainage easement and a 12' utility easement, and setbacks like a 30' building setback. A note mentions a transformer box at a corner position. A large white circle is overlaid on the map, containing the text 'Questions?' and 'Thank you for a great class!'. There are also some teal and blue decorative elements on the map.

Questions?

Thank you for a great class!