Real Estate Price Prediction Model

Analyzing Property Prices with Machine Learning

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The Problem

The goal of this project is to create transparency for new home buyers and sellers by predicting property prices using a machine learning model, factoring in features such as square footage, number of beds, and location.

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Data Gathering Survey

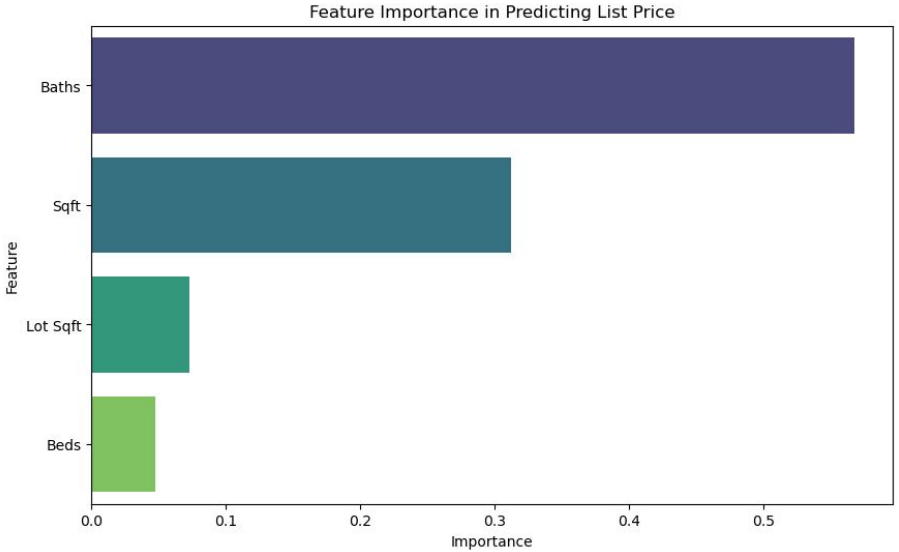
- Scrapped realtor.com
- Used BeautifulSoup and Requests

- Transferred key variables into CSV
- Structured dataset with numeric and categorical columns.

- Addressed Missing values
- Joined tables of real estate listing of different areas

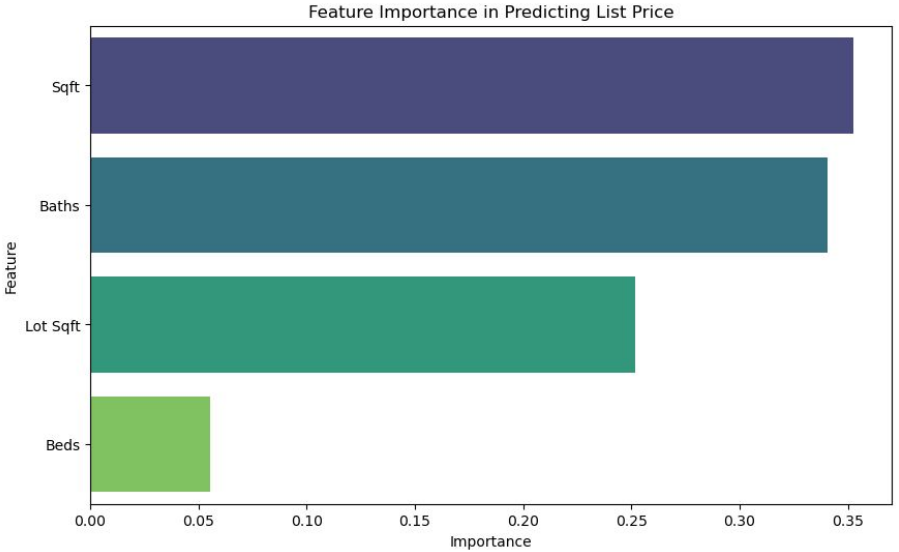
Data Analysis

Greenwich, CT



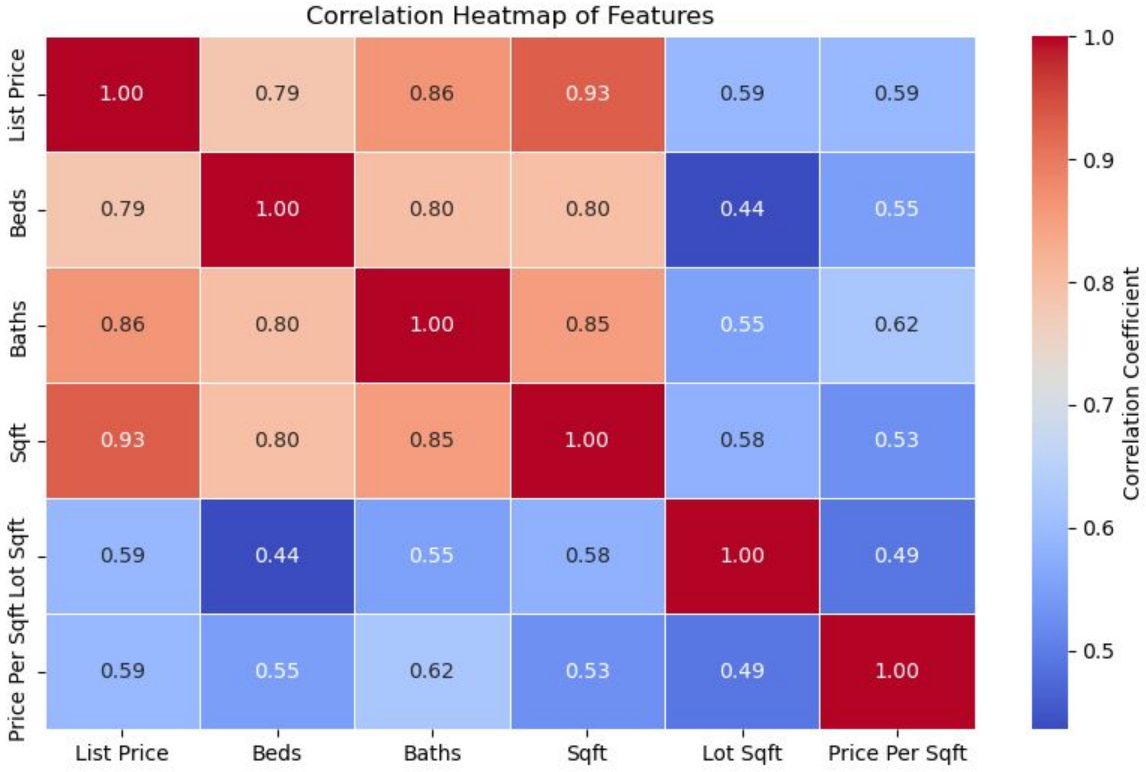
Cross-validation RMSE: 1457383.8636886892
RMSE: 1133831.822796384
R-squared: 0.9027947518648989

Santa Barbara, CA



Cross-validation RMSE: 847257.0753271215
RMSE: 73900.77862514487
R-squared: 0.9380641804692145

Price Prediction



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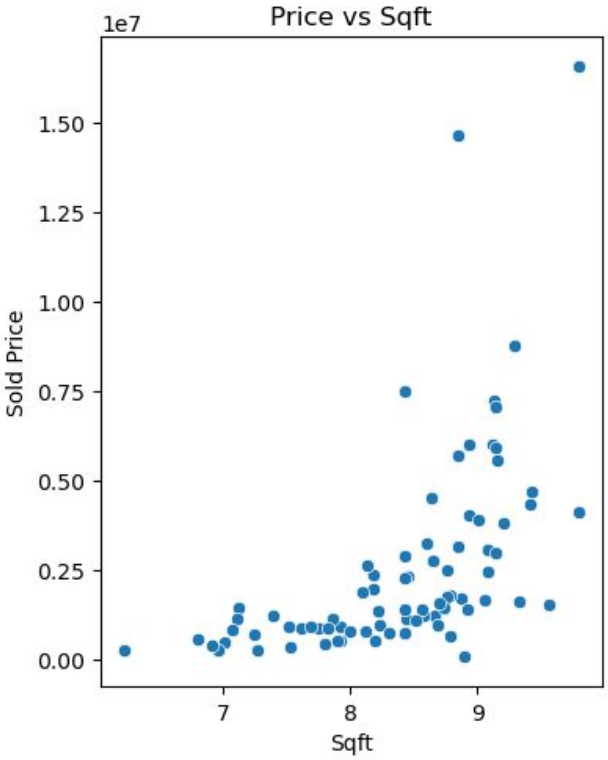
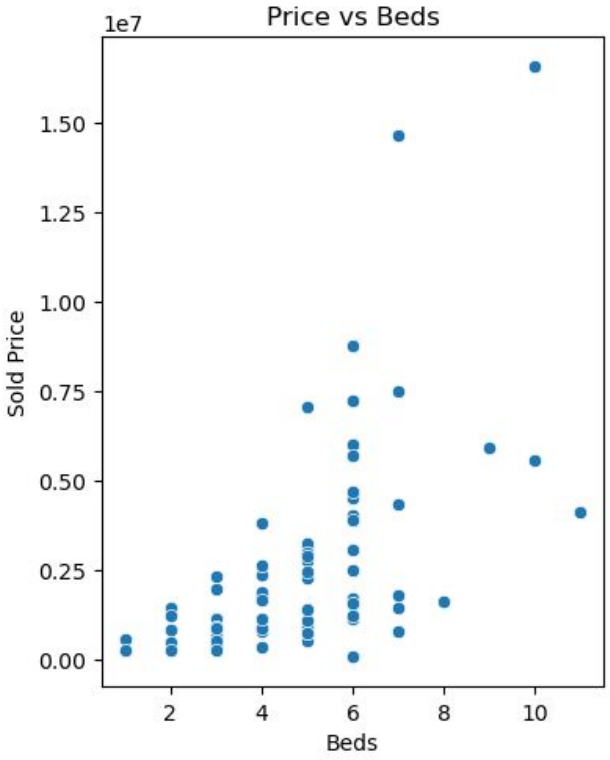
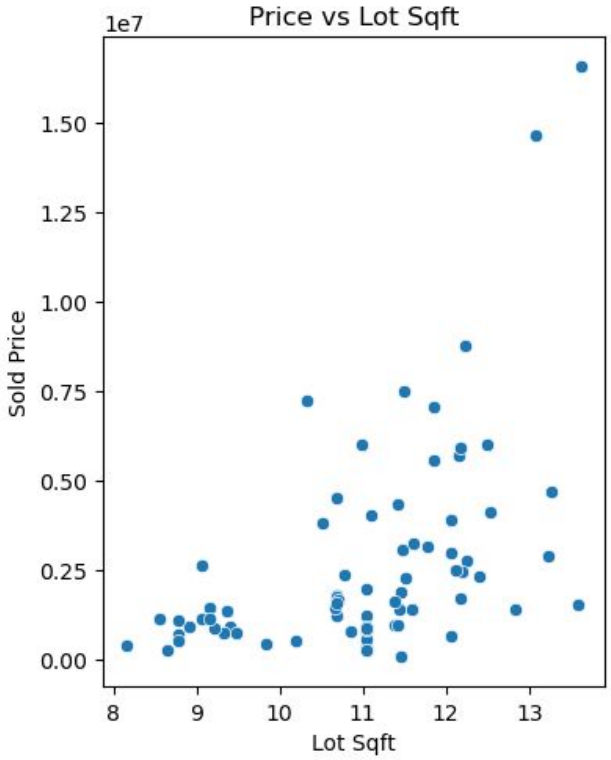
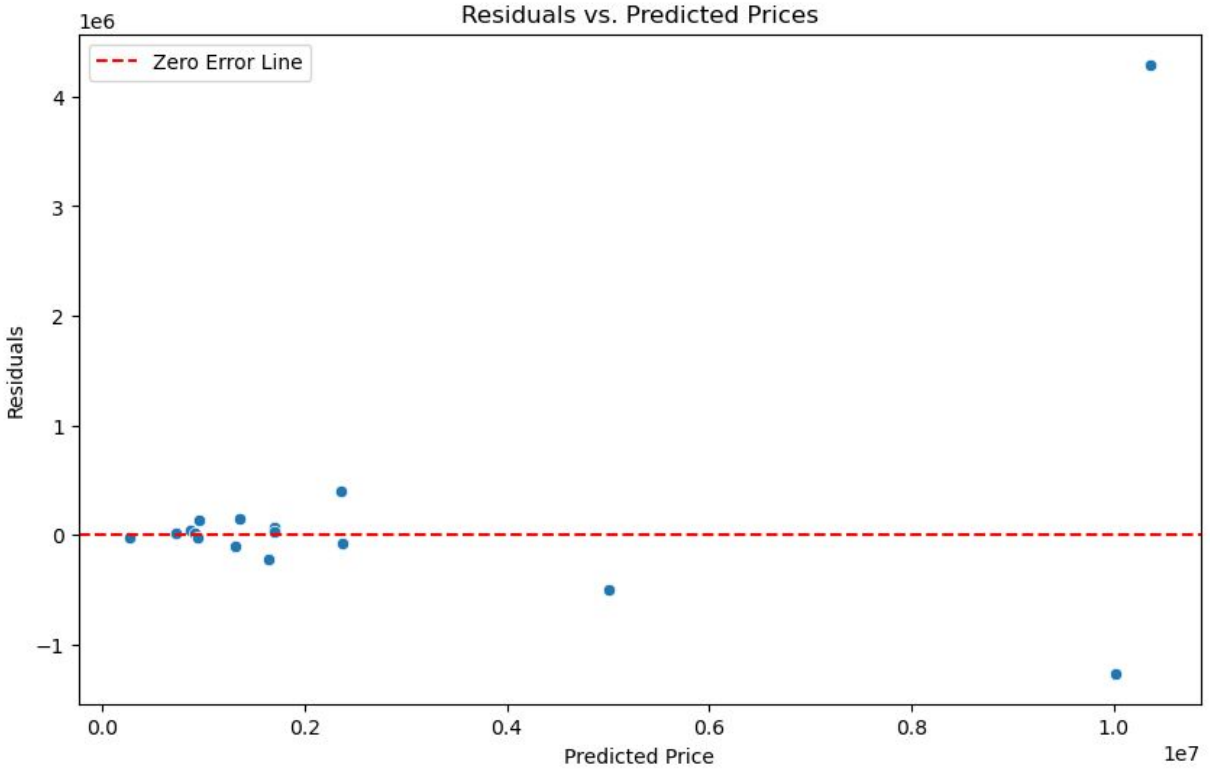






Price Prediction



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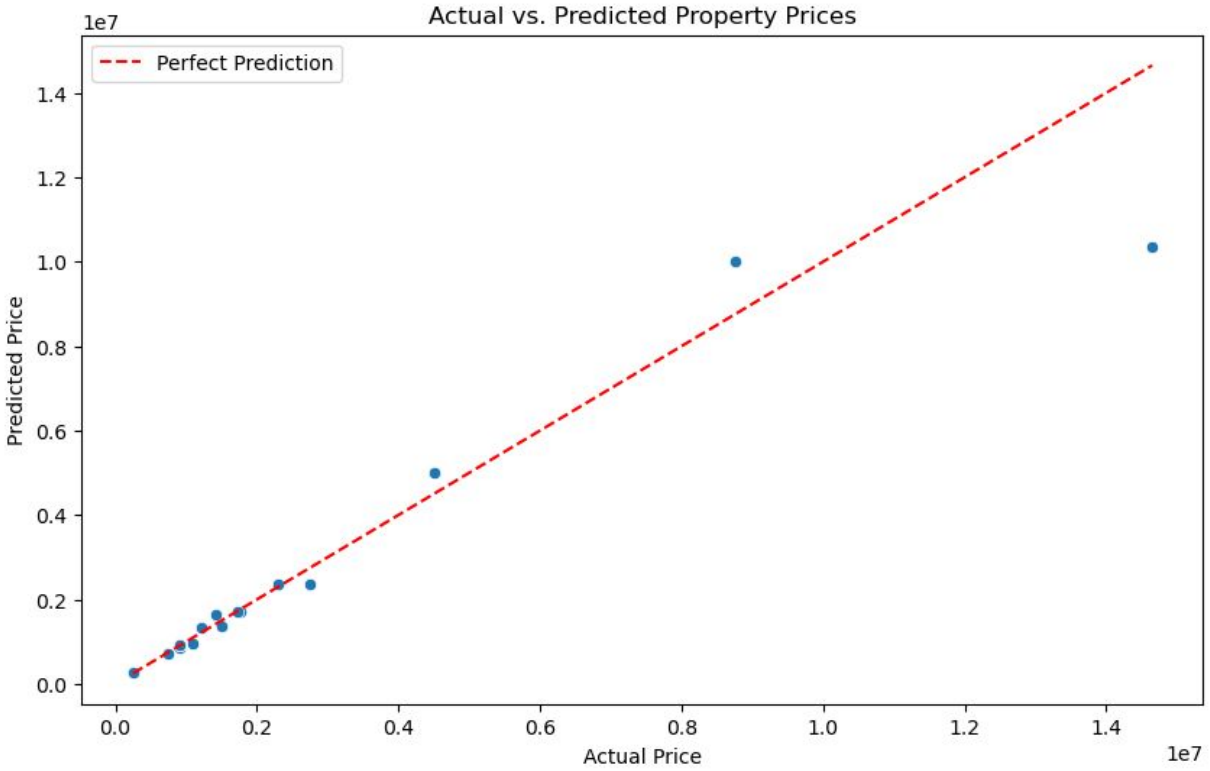

Value to Stakeholders

Real Estate Professionals

Can use the model for more accurate property pricing, helping agents price homes more effectively and close deals faster.

Investors

Provides better forecasting of property prices, aiding in investment decisions based on expected price trends.

Homebuyers/Sellers

Assists in negotiating fair prices by understanding the likely market value of a property.

Ethical Implications

Bias in the Data:

- Scraped data may overrepresent certain regions or property types, impacting model accuracy.
- External factors like market trends may also introduce bias.

Privacy Concerns:

- Using publicly scraped data raises ethical and legal considerations.
- Ensuring compliance with data policies is essential.

Impact on Housing Market:

- Automated pricing may influence buyer and seller decisions.
- Over-reliance on models could distort market dynamics.

Conclusion

Key Takeaways:

- The price prediction model successfully predicts property prices with a high degree of accuracy.
- The insights derived from the model can benefit real estate professionals, investors, and homebuyers.
- Ethical considerations must be taken into account to ensure fairness, transparency, and privacy.

Future Work:

- Collect more diverse data from multiple regions.
- Experiment with deep learning models to further enhance predictions.
- Implement real-time pricing updates based on market trends.