Non-Technical Summary - Winnipeg Property Valuation Model

I developed an automated machine learning system to predict property assessment values in Winnipeg using public data from the City's Open Data Portal. The analysis examined 1,000 properties with 45 different characteristics to identify key value drivers.

Approach:

The project involved thorough data exploration, cleaning, and testing three different prediction models: Linear Regression (baseline), Random Forest, and XGBoost.

Key Findings:

- **Random Forest achieved 86% accuracy** (R^2=0.86), making it the best performing model
- **Property size is the #1 value predictor** - larger living area strongly correlates with higher values
- Other important factors include property age, number of rooms, and land area
- The model successfully explains 86% of variation in property values

Continuous Improvement

Ongoing refinement of the model based on evolving data, industry insights and the use of geolocation parameters can be used to finetune property valuation.

Business Value:

This tool can automate property valuations, assist in assessment reviews, and identify key investment factors.

Recommendations:

The deployment of the Random Forest model is recommended for automated assessments while continuing to collect data and retrain model on locations, proximity to amenities, and notable landmarks will improve future predictions.