Prediction of real estate property prices in Montreal

Nissan Pow **Emil Janulewicz** **L. Dave Liu**

Prediction Question

Predict the selling price of properties

Motivations: **Suggest appropriate**

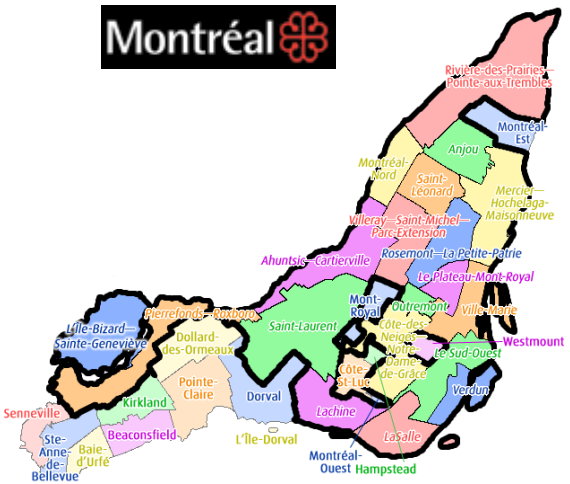
1. **Selling prices for the sellers**
2. **Buying prices for the buyers**

Data sets

1. Property listings in Montreal from real estate website

- **The targets: Prices**
- **The features: Location, Size, Property type, etc.**

2. Bounding polygons from Montreal Open Data



3. Additional demographics from Statistics Canada

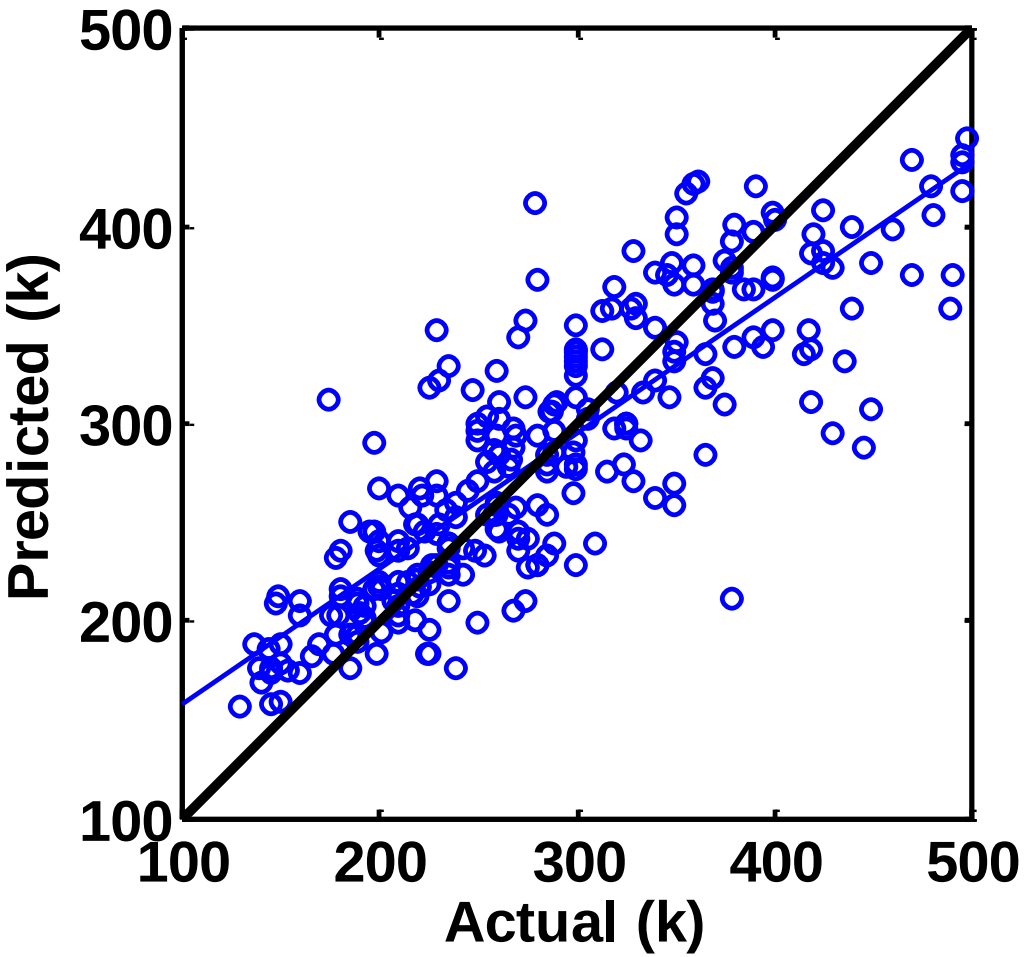
- **The features: Income, Population age, Crime rate, etc.**

Machine learning methods

Regression of the prices

- **Linear and logistic regressions**
- **Random forest**
- **k-Nearest Neighbours**
- **SVM**
- **Neural Networks** (Quinlan 93)

Preliminary Results



Currently at 0.87 of actual price

Goal: Predict within 0.95. (Caplin et al. 08)

Preliminary Results

TABLE 1: Variance Accounted For (VAF) of different features.

Feature	Area	# Rm	# Bedroom	# Bathroom	Pool
VAF	0.472	0.141	0.158	0.329	0.110

Regression analysis of the prices

So far, the living area and the number of rooms (bathrooms) account for the most of the variance in price.

Future directions

- **Incorporate data from Statistics Canada based on the defined Montreal boroughs**
- **Looking at temporal trends pending on the availability of data**
- **Implement additional features such as higher order terms and their interactions** **(Boston housing price dataset)**
- **Implement neural network for regression** **(Quinlan 93)**