# Prediction of real estate property prices in Montreal


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# Prediction Question

**Predict the selling price of properties**

**Motivations:** **Suggest appropriate**

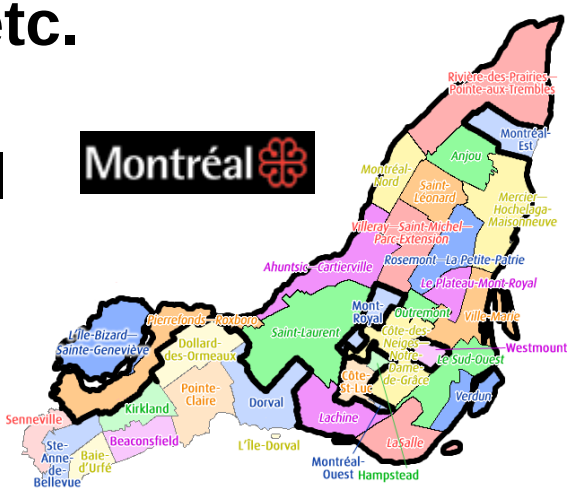
1. **Selling prices for the sellers**
2. **Buying prices for the buyers**

# Data sets

1. **Property listings in Montreal from real estate website**
    - **The <u>targets</u>: Prices**
    - **The <u>features</u>: Area, # Rooms, etc.**

2. **Bounding polygons from Montreal Open Data**

3. **Additional demographics from Statistics Canada**
    - **The <u>features</u>: Income, Crime rate, etc.**

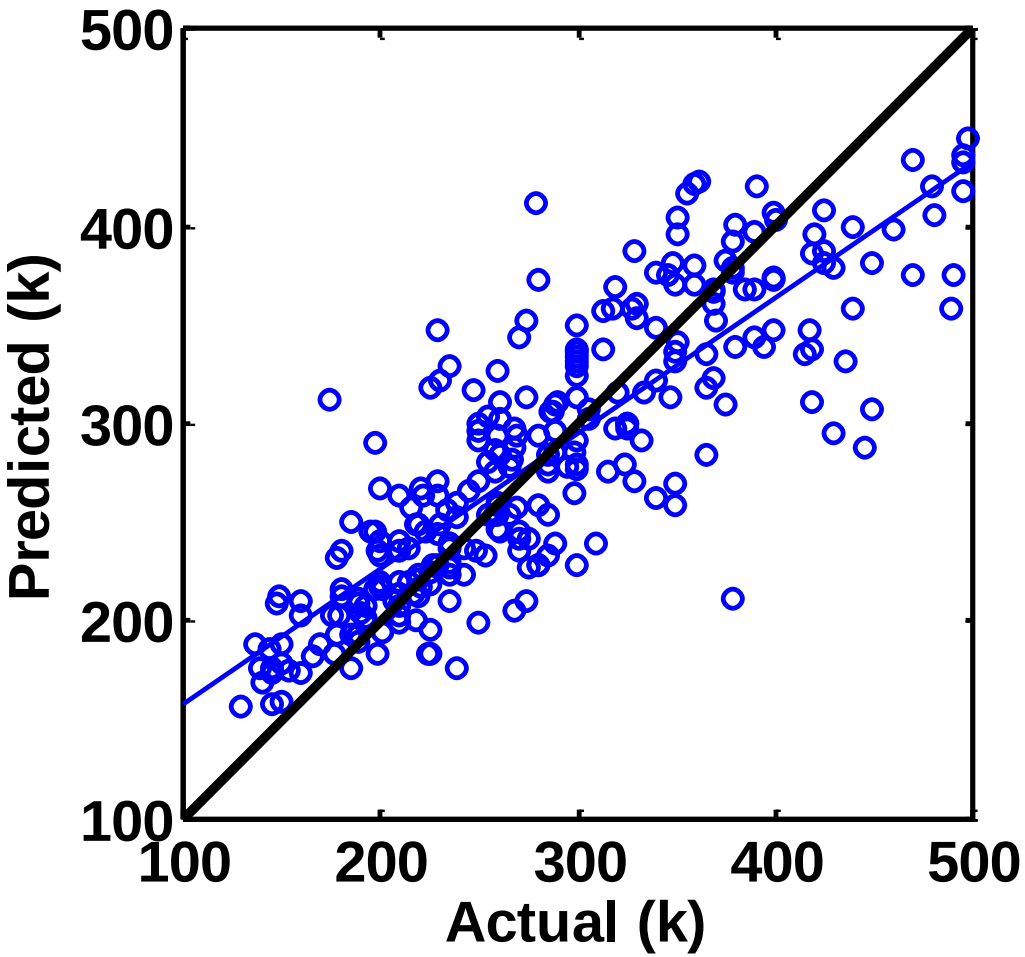


# Machine learning methods

**Regression of the prices**

- **Linear regression**
- **Decision tree**
- **k-Nearest Neighbours**
- **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**
- **Implement additional features such as higher order terms and their interactions** **(Boston housing price dataset)**
- **Implement neural network for regression** **(Quinlan 93)**