# 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>: Location, Size, Property type, etc.**

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

3. **Additional demographics from Statistics Canada**
   - **The <u>features</u>: Income, Population age, Crime rate, etc.**
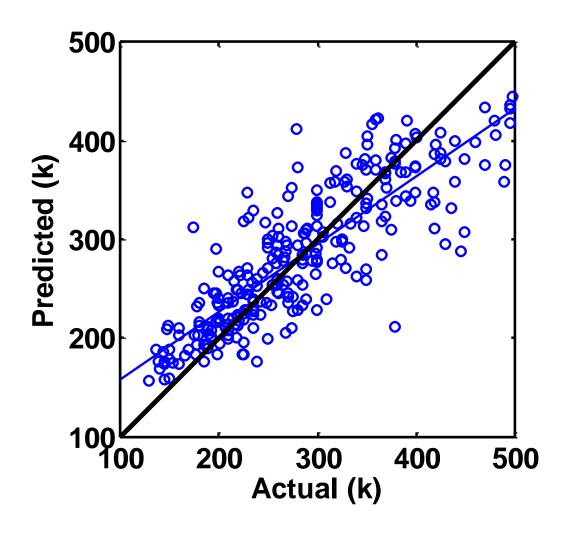
# Machine learning methods

**Regression** of the prices
    Linear and logistic regressions
    Random forest
    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 | # Rm | # Bedroom | # Bathroom | In Westmount |
|---------|------|-----------|------------|--------------|
| VAF | 0.146 | 0.169 | 0.338 | 0.113 |

**Regression** **analysis of the prices**

**So far, the number of rooms (bathrooms) and geographical location (being in Westmount) 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)**