YORK UNIVERSITÉ UNIVERSITY

Advance Analytics Capstone 1050

Rental and House Prices in Canada

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Introduction

Avaya Research Center is evaluating cost of living for both renters and home buyers in the major Canadian Cities. This information will provide a better understanding of what drives rent and housing costs. The focus will be to find fact-based insights on meaningful patterns in the housing market. The drastic change in the Canadian housing market started back in late 2010 by foreign investors, that lead to an increase in renting and owning a home in Canada. Real estate became the perfect long term investment option after a steady drop in interest rates. Owning a home is also an ideal need for young adults in Canada and the social pressures along with increasing opportunities for profit, were driving the growth of the market, causing first time home buyers to struggle in finding a place to live at a reasonable price.

In response to this, the Canadian government decided to step in and attempt to slow down prices naturally; in April 2017, Canadian Federal Finance Minister, Bill Morneau, met with Charles Sousa and John Tory, in an attempt to find a solution. As a result of this, they implemented a foreign buyer tax; this is due to the fact that many non-residents/citizens of Canada, purchase a lot of the homes that cause housing price increase. Most of these homes have become rental properties. In addition, the provincial Fair Housing Plan set in place stricter rent controls; uninsured renters are now required to pass a stress test in order to see if they can handle a rise in rates. Ontario has created a Fair Housing Plan made up of 16 points to help combat the growth and make homes more affordable. These 16 points are:

1. Non-resident speculation tax
2. Rent is only allowed to rise at rates posted in annual provincial rental increase guideline
3. Develop standard leases that would further help protect tenants and ensure landlords
4. Create program to balance the value of surplus land assets
5. Put a vacant properties tax into place
6. Tax to make sure new apartment complexes is similar to other current complex properties
7. Introduce a 5-year program to facilitate the building of more rental apartments
8. Make it easier to use property taxes to generate more development opportunity
9. Create Housing Supply team to help uncover and fix barriers to housing development
10. Work to fight tax avoidance practices
11. Reassess rules involving customer representation in real estate transactions

12. Creation of housing group to advise the government about the state of the housing market
13. More education for consumers about their real estate rates
14. Create more through reporting requirements for real estate sales
15. Improve reliability of elevators in Ontario buildings
16. Updating the Growth Plan for the Greater Golden Horseshoe

Objectives

Our objective is to determine the most cost effective price for renters and home buyers base on their household income. Even though factors, such as a rise in unemployment rates increase in some of Canada's major cities, housing prices are still rising. Mortgage rates have been sharply rising and owning a home has started to consume over 50% of the average household's monthly income. We conclude that with increases in household debt, stagnant wages and expected rises in interest rates, a decline is inevitable. How much does a person need to make as income, in order to be able to able to afford rent or purchase a home?

Problem Statement

We will be focusing on making housing prices more affordable for renters and home buyers. By evaluating factors such as household income and monthly debt, we can determine if there is a correlation between the cost of the housing in the major Canadian cities and the household income and debt.

Data Sources

The data that was gathered, was via third-party datasets, collected from external sources from the Canadian Mortgage and Housing Corporation. The data sets include Rental Rates, Median Income After Tax, Average Monthly Debt Payments, Ownership Rates and Price Quartiles and Averages for Unabsorbed and Absorbed Homeowner and Condominium Units.

Collection Method

Secondary data collection was the process of obtaining the data for this project the data includes quantitative data.

Analysis Methods

The data that was collected includes structured numeric data. We will be using Linear Regression, Random Forest and Decision Tree to do our modeling evaluation process to find continuous values; two class variable and multi-class classifications.

Limitations/Constraints

Based on the data that was gathered, we will be able evaluate rent cost by the different municipalities in Canada, the average household income and the average monthly debt

payments. We were not successful in gathering data for average home price per different municipalities. We were able to find a substitute; the data is not fully indicative of the results, due to missing values, however, it gives us a data for absorbed and unabsorbed homes in the different municipalities as well as Home Ownership Rates .

Project Timeline

Week 1:

- Sign up for GitHub, research python libraries and data APIs. Start developing a topic area/dataset for inquiry.

Week 2:

- Begin data collection, assembling methodology for Exploratory Data Analysis. ETL work into data warehousing. Begin exploring data and documenting issues/limitations/needs understanding needs/limitations regarding research question (might need to adjust question, scope, data, etc.).

Week 3:

- Submission of EDA sprint (via GitHub/Moodle). Collect/Augment/Refine project according to Sprint 1 findings. Develop several analytical methodologies (these should be methods you are interested in learning – like Topic modelling or sentiment analysis, or social network analysis, etc.)

Week 4:

- All data collection should be completed. The methodology should be finalized.

Week 5

- Submission of Sprint 2 to GitHub/. Includes codebase, report (brief), and plan for analysis.

Week 6

- Start final sprint prepare for final submission.

Week 7

- Work on final project.

Week 8

- Final report – pdf/word doc 3-5 pages of background, research question, methodology, results, conclusion GitHub Repo. Well documented – meaning someone who comes across it randomly should know exactly what it is, how to re-create it, and what your repo contains Final notebooks/analysis/results. Each sprint notebook documented, detailed, and refined.