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STAT 406 Project Proposal: Modelling and Predicting Vancouver Real Estate Housing Price

Introduction and Motivation

Vancouver's real estate market has been torrid recently with the local government trying to cool off the market. We wish to find relevant factors affecting the price and use the data to train a model for prediction. This project can provide investors with a quantitative picture of the real estate market.

Project Summary

We aim to find factors and refine them to gather our explanatory variables.

○Response Variable: Avg price of detached houses in Greater Vancouver;

○Possible Explanatory Variables: CPI, income, population density, newly built houses, exchange rate, unemployment rate, rent, sales, listing numbers, temperature, tourists, permission of construction, air quality, season.

We utilize supervised learning models such as LASSO, regression splines. We can locate the best prediction function based on MSPE values. Our data comes from the following sources: Bank of Canada, Government of Canada, National Household Survey (NHS), Tax-based Income Data from the Provincial Government, MLS Monthly Stats Reports.

Data Description: We have monthly CPI data for Vancouver from 2005 to August 2017, Canadian interest rates monthly data from 2005 to September 2017, monthly unemployment rate and income data of Vancouver from 2005 to August 2017, monthly real estate data(rent, sales, listing numbers) from 2005 to September 2017, daily temperature and air quality index data from 2005 to present. In total we have 120 observations.

Project Details

1. Architecture and Environment: R/ R studio, LaTeX.
2. Deliverables : This project will be in the form of report with several sections: Nov. 2nd, abstract and data description; Nov, 15th, Methodology; Nov. 22nd, Analysis; Nov. 28th, result and conclusion.

Conclusion

Throughout the project, we will construct the optimal learner to predict housing price. This project intends to describe the trend of housing market and give a credible prediction, which helps government and people understand more about the real estate market, and avoid housing market bubbles.

References

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