COURSERA IBM APPLIED DATA SCIENCE CAPSTONE

Investigation of Zurich neighbourhoods and apartment renting prices

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May 2020

1. INTRODUCTION

Zurich is the largest city and economical capital of Switzerland, with more than 400,000 inhabitants (1.1 millions including the suburban area). It is a world major financial and banking center and hosts important research centres and global high-tech corporations. Zurich is also a major railway hub and it has an international airport with connections to every continent. Its high standard and quality of life are renowned and continuously attract foreign young professionals as well as families willing to relocate there. With more than 30% of non-Swiss citizens, Zurich offers a truly international and multicultural environment.
In this context, not surprisingly, housing is a major issue and there is high competition for getting rented apartments in the city. The market is tough for flat seekers and prices are generally high.

2. BUSINESS PROBLEM

Zurich municipality is divided into twelve districts (locally called: Kreis 1..12) and it includes 34 neighbourhoods. An official list of average apartment renting prices based on districts is available from the city of Zurich, but not for each individual neighbourhood.
The present work aims at helping an apartment seeker, one in particular that has no or little knowledge of the city, by providing more insights on neighbourhood differentiations based on venues and neighbourhood renting prices. In particular the following two issues will be explored:

1. Based on the city venues distribution in the 12 districts, is it possible to derive a model for a rough estimation of the renting price of each neighbourhood? This will allow to see if, within a district, prices are uniform or there are more convenient neighbourhoods.
2. Understanding the differences among the neighbourhoods based on their venues density and distribution and classify them. Compare the classifications in relation to district and estimated neighbourhood prices.

3. DATA

The following are the used data sources:

- Zurich neighbourhoods: https://en.wikipedia.org/wiki/Subdivisions_of_Z%C3%BCrich
- GPS coordinates of Zurich and its neighbourhoods from geopy, ArcGis geocoding and Google Maps.
- Zurich maps from Folium.
- Average apartment rent prices per district: https://www.stadt-zuerich.ch/prd/de/index/statistik/themen/bauen-wohnen/mietpreise/mietpreise-strukturerhebung.html
- Venues from Foursquare API.

The neighbourhood names will be used to research for the gps coordinates of each neighbourhood. The coordinates will allow map plots and also to search for the venues within each neighbourhood with Foursquare API. District average rent prices will be employed to create a model correlating the venues to the price for the district and using it for prediction of neighbourhood prices.