Coursera Capstone Project

"Zurich best Neighbourhood for Datalinks"

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1.Introduction

1.1 Background

Zürich is the largest city in Switzerland and the capital of the canton of Zürich. It is located in north-central Switzerland at the north-western tip of Lake Zürich.
Zürich is a hub for railways, roads, and air traffic. Both Zurich Airport and railway station are the largest and busiest in the country.
Zürich is among the world's largest financial centres: the city is home to many financial institutions and banking companies. Many of Switzerland's research and development centres are concentrated in the Greater Zürich area and the low tax rates and canton funding subsidies attract overseas companies to set up their headquarters or finance treasury services in the city.

1.2 Problem

Datalinks a company specialising in data analytics wants to set up a branch in Zurich as it wants to target financial institutions as potential clients.
The company has decided that in order to choose one of Zurich's neighbourhood to open its branch a series of criteria must be met. Specifically, the neighbourhood must have a:

- Bus or Tram station as it makes it easier for the workforce to commute.
- Restaurant, Italian Restaurants would be ideal as the Managing Director of Datalinks is very fond of Italian cuisine as he always have his lunch at a restaurant and likes to discuss deals in front of a good carbonara.
- Park as the company encourages employees to have a daily walk at lunch break to unwind and relieve stress.
- Pizza place as it is tradition to have "pizza Fridays".

1.3 Target Audience

Datalinks has appointed me to recommend the best location based on the afore-mentioned criteria. The target audience is the senior management of the company as they will use this information to then look at available properties and decide which one to rent.

2.Data acquisition and cleaning

2.1 Data sources

The city of Zurich will be analysed in this project. Zurich is divided in 12 *Kreis* (Districts) which are further subdivided into 20 Neighbourhoods. The data regarding Zurich's neighbourhoods was taken from Wikipedia at this link. This data provides the name of the neighbourhood and which district the neighbourhood belongs to. See example below:

CoA ⬍	Name ⬍	Merger ⬍	District ⬍
	Affoltern	1934	11
	Albisrieden	1934	9
	Altstadt	1893	1
	Altstetten	1934	9
	Aussersihl	1893	4 and 5
	Enge	1893	2

In order to have the longitude and latitude for each neighbourhood an API call to the OpenStreetMap database was used.

The data to identify if the neighbourhoods meet the contractor's criteria will be taken from Foursquare. Specifically, an API call containing the coordinate of the various neighbourhood was used to identify what type of venues are within a radius of 600 meters from the neighbourhood (see example below).

	Neighbourhood	1st Most Common Venue	2nd Most Common Venue
3	Altstetten	Bakery	Supermarket
18	Witikon	Bus Station	Indian Restaurant
0	Affoltern	Bus Station	Supermarket
15	Unterstrass	Café	Bakery

2.2 Data cleaning

The data scraped from Wikipedia was enriched with the latitude and longitude data coming from the OpenStreetMap database. The resulting table was checked to verify that the geocoordinate were correct. All the neighbourhood coordinates were correct except for the neighbourhood of Altstadt as it was pointing to the quarter of Altstadt in the city of Winterthur.

	Neighbourhood	District	Coordinates	Latitude	Longitude
0	Affoltern	11	(Affoltern, Kreis 11, Zürich, Bezirk Zürich, Z...	47.418762	8.507186
1	Albisrieden	9	(Albisrieden, Kreis 9, Zürich, Bezirk Zürich, ...	47.374857	8.484657
2	Altstadt	1	(Altstadt, Stadt, Winterthur, Bezirk Winterthu...	47.498731	8.726387
3	Altstetten	9	(Altstetten, Kreis 9, Zürich, Bezirk Zürich, Z...	47.387403	8.486061
4	Aussersihl	4 and 5	(H+ Hotel Zürich, 537, Badenerstrasse, Hard, A...	47.382450	8.500603
5	Enge	2	(Enge, Kreis 2, Zürich, Bezirk Zürich, Zürich,...	47.361789	8.528708

This error was rectified by manually inputting the right coordinate found at this link.

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3	Altstetten	9	(Altstetten, Kreis 9, Zürich, Bezirk Zürich, Z...	47.387403	8.486061
4	Aussersihl	4 and 5	(H+ Hotel Zürich, 537, Badenerstrasse, Hard, A...	47.382450	8.500603
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