Analyzing the Neighbourhoods of Singapore

Helping Expats find the right Neighbourhoods for themselves

What is the problem we're solving?

For new migrants and expats, housing is an important area of concern.

Different families will have different needs - some will want to have good schools nearby for their kids, movie buffs will want good theaters nearby, foodies will want a good selection of quality restaurants in their neighbourhood.

Our goal here is to **assist these families in making a good quality selection for their neighbourhood.**

How are going about doing this?

To solve any problem using Data Analysis, we will need the <u>data</u> to start with.(of course!).

We require a table of all the <u>Neighbourhoods</u> of Singapore along with their <u>coordinates</u>. We can use this data to then <u>fetch</u> a list of available <u>venues/amenities</u> for each neighbourhood.

The first step is done through this(<u>https://github.com/ianap/sg-neighborhood</u>). Here the table is already available for us for use.

The second step(fetching venues) can be done through the FourSquare API which will provide us with the list of available venues/amenities for each neighbourhood.

How did we go about exploring the data for our needs?

Once we had the list of Neighbourhoods and the Venues that fall in their boundaries, we had to start playing around with the data based on our requirements.

We implemented OneHot encoding which converts the table into a boolean table of Neighbourhoods and Venue Categories. A (Neighbourhood x Category) will be TRUE if there is at least one Venue of that Category in that Neighbourhood, else it'll be FALSE.

Then, based on our requirements(say "Theater", "Vegan Restaurant", etc.) we can do either of JOIJ, FILTER, COMPARE, etc. on this Onehot encoding table with the original main table of data.

A couple that needs Schools nearby for their Child

A couple with a 4-year old kid are in need of good Schools nearby, which will decide which neighbourhood they will stay in.

'Highest number of Schools are'					
	Neighbourhood	Venue Category	Total Venues	High School Frequency	Child Care Service Frequency
10	CELADON VIEW	High School	1	0.033333	0.0
40	PASIR RIS CENTRAL HAWKER CENTRE	High School	1	0.022727	0.0
77	RIVERLIFE CHURCH	High School	1	0.033333	0.0
119	THE PERIWINKLE	High School	1	0.111111	0.0

The data we had showed us that Singapore doesn't have neighbourhoods with abundance of schools. Most of the Schools are fairly spread out, and almost no neighbourhood has a School and a Child Care Centre together.

A young professional looking for Theaters and Chinese Restaurant

A young professional who has accepted an offer to relocate to Singapore are house hunting. Their favourite pastimes are to watch Theater and explore Chinese cuisine.

'Highest number of Movie Theaters are'

	Neighbourhood	Venue Category	Total Venues	Movie Theater Frequency	Theater Frequency	Performing Arts Venue Frequency	Cantonese Restaurant Frequency	Chinese Restaurant Frequency	Hainan Restaurant Frequency	Hakka Restaurant Frequency	Dim Sum Restaurant Frequency
129	SINGAPORE MANAGEMENT UNIVERSITY (SCH OF ECONOM...	Movie Theater	3	0.030000	0.02	0.0	0.0	0.000000	0.0	0.0	0.01
3	BALMORAL TOWER	Movie Theater	2	0.125000	0.00	0.0	0.0	0.062500	0.0	0.0	0.00
54	GOODWOOD GRAND	Movie Theater	2	0.105263	0.00	0.0	0.0	0.052632	0.0	0.0	0.00
161	THE BALMORAL SPRING	Movie Theater	2	0.090909	0.00	0.0	0.0	0.090909	0.0	0.0	0.00
10	CAMBERLEY INTERNATIONAL PRE-SCHOOL PRIVATE LIM...	Movie Theater	2	0.125000	0.00	0.0	0.0	0.062500	0.0	0.0	0.00

Most of these Neighbourhoods have both Movie Theater and Chinese Restaurants(as shown in their Frequency columns). The Expat can choose either of these Neighbourhoods for their house.

Conclusion

With minor tweaks in the code to accommodate new requirements, this code can be used to assist any expat(family or single) to find potentially good neighbourhoods that cater to their needs.

Links to relevant Documents

Link to PDF Project Report

Link to the Notebook