The Battle of Neighbourhoods

Introduction

Budapest, Hungary is one of the biggest start-up hubs of the CEE region, and numerous multinational companies have offices/ factories located here as well. As a result, the number of expats in the city is growing, and is expected to grow further if the economy does well. Being a local of Budapest, I have been witnessing the globalization of my home city for quite a few years now, and my project intends to offer some insight to those who would consider moving here.

Business Problem

When a person moves into a new place there are a number of factors to be considered before they can comfortably agree on a place to settle. My project will explore 22 of Budapest's districts from two main perspectives - rental prices and things to do.

The overall purpose is to provide an outline of the city map - so it is easier to consider the advantages and disadvantages of certain areas based on the cost of renting and additional opportunities for leisure activities. It is probably most useful for those who already know where they would be working as that location would come in as an extra factor. Nevertheless, I hope my analysis will provide some valuable guidance for anyone interested.

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Data

In order to conduct my analysis I will use three main sources of data - Wikipedia, a website with real-eastate related statistics, and the Foursquare API.

To get the average monthly rental price per district, I am going to scrape the database from a real estate agency's website. The first thing I need to do is to read the table into a dataframe, and remove the parts that I will not need. Budapest has 23 districts, however, given that there was no data available concerning district 23, I will not include this area in my analysis. In order to make the mapping part easier, I will also scrape the Wikipedia page of Budapest for the relevant postal codes, and I am going to add that to the dataframe.

	District number	Postal code	Price per m2 in HUF	Monthly rent in HUF
1	I.	1010	3 948	321 000
2	II.	1020	3 624	353 000
3	III.	1030	2 788	166 000
4	IV.	1040	2 663	100 000

The second part of data will be obtained by the use of Geocoder - to get the coordinates of each district, and I will utilize the Foursquare API to explore each neighbourhood. The top 5 venues per neighbourhood will be listed.

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Methodology

The first obstacle was to create a DataFrame that includes all the information I preferred to work with. The average prices have been scraped from a real-eastate website, while the postcodes came from a Wikipedia table,and the geolocational data have been added manually based on Google maps.

The first complete table on the right shows that the cheapest place to rent is the 17th district followed closely by district 20 and 21.

	District number	Postal code	Price per m2 in HUF	Monthly rent in HUF	Latitude	Longitude
0	I.	1010	3 948	321 000	47.4968	19.0375
1	II.	1020	3 624	353 000	47.5393	18.9869
2	III.	1030	2 788	166 000	47.5672	19.0369
3	IV.	1040	2 663	100 000	47.5649	19.0913
4	V.	1050	3 336	198 000	47.5002	19.0520
5	VI.	1060	4 477	322 000	47.5099	19.0626
6	VII.	1070	3 953	267 000	47.5027	19.0734
7	VIII.	1080	3 357	198 000	47.4894	19.0707
8	IX.	1090	3 232	160 000	47.4649	19.0916
9	X.	1100	2 429	88 000	47.4821	19.1575
10	XI.	1110	3 078	200 000	47.4593	19.0187
11	XII.	1120	3 568	314 000	47.4991	18.9905
12	XIII.	1130	3 331	186 000	47.5355	19.0709
13	XIV.	1140	3 106	153 000	47.5225	19.1147
14	XV.	1150	1 947	90 000	47.5589	19.1193
15	XVI.	1160	2 250	90 000	47.5183	19.1919
16	XVII.	1170	1 923	70 000	47.4803	19.2667
17	XVIII.	1180	1 957	95 000	47.4281	19.2098
18	XIX.	1190	2 000	88 000	47.4457	19.1430
19	XX.	1200	2 143	75 000	47.4333	19.1193
20	XXI.	1210	2 015	87 000	47.4244	19.0661
21	XXII.	1220	1 926	88 000	47.4250	19.0317

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Methodology

The initial Foursquare data we pulled showed us the top 5 venues of each district in question. The central districts tend to have more leisure related facilities, but the outskirts have a number of public transport opportunities.

	Cluster Labels	Postal code	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	1	1010	Café	Hungarian Restaurant	Plaza	Historic Site	Coffee Shop	Scenic Lookout	Pub	Bistro	Hotel	Park
1	3	1020	Park	Track	Playground	Food	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
2	5	1030	Dog Run	Heliport	Train Station	Baseball Field	Electronics Store	Eastern European Restaurant	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint
3	1	1040	Grocery Store	Pharmacy	Tram Station	Park	Hungarian Restaurant	Fast Food Restaurant	Stationery Store	Convenience Store	Performing Arts Venue	Farmers Market
4	1	1050	Italian Restaurant	Hotel	Hungarian Restaurant	Restaurant	Coffee Shop	Bistro	Wine Bar	Dessert Shop	Plaza	Sandwich Place
5	1	1060	Pub	Coffee Shop	Cosmetics Shop	Clothing Store	Women's Store	Italian Restaurant	Indian Restaurant	Thai Restaurant	Theater	Gym
6	1	1070	Hotel	Coffee Shop	Bar	Café	Restaurant	Music Store	Burger Joint	Supermarket	Garden	Cocktail Bar
7	1	1080	Coffee Shop	Hotel	Gastropub	Italian Restaurant	Plaza	Clothing Store	Café	Electronics Store	Hostel	Bakery
8	4	1090	Train Station	Electronics Store	Office	Yoga Studio	Food & Drink Shop	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
9	2	1100	Tram Station	Bus Stop	Brewery	Grocery Store	Fruit & Vegetable Store	Arts & Entertainment	Deli / Bodega	Athletics & Sports	Paper / Office Supplies Store	Yoga Studio
10	1	1110	Food	Plaza	Playground	Pizza Place	Gym	Pharmacy	Fast Food Restaurant	Bistro	Yoga Studio	Fried Chicken Joint
11	1	1120	Park	Platform	Hungarian Restaurant	Grocery Store	Playground	Dessert Shop	Pizza Place	Pharmacy	Bus Stop	Eastern European Restaurant
12	1	1130	Grocery Store	Café	Coffee Shop	Restaurant	Diner	Sporting Goods Shop	Indian Restaurant	Fried Chicken Joint	Soup Place	Chinese Restaurant
13	1	1140	Bus Stop	Eastern European Restaurant	Thrift / Vintage Store	Pizza Place	Burger Joint	Lottery Retailer	Music Venue	Tennis Court	Farmers Market	Cosmetics Shop
14	2	1150	Bus Stop	Grocery Store	Supermarket	Restaurant	Pizza Place	Gymnastics Gym	Concert Hall	Food & Drink Shop	Garden Center	Soccer Stadium

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15	1	1160	Dessert Shop	Soccer Stadium	Plaza	Paintball Field	Gym / Fitness Center	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
16	1	1170	Restaurant	Playground	Bakery	Food	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
17	2	1180	Bus Stop	Playground	Tram Station	Food & Drink Shop	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
18	0	1190	Bus Stop	Salon / Barbershop	Yoga Studio	Food & Drink Shop	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
19	2	1200	Bus Station	Tram Station	Grocery Store	Bus Stop	Fountain	Garden	Gaming Cafe	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop
20	1	1210	Grocery Store	Beer Garden	Clothing Store	Light Rail Station	Bus Stop	Cosmetics Shop	Chinese Restaurant	Pedestrian Plaza	Gym	Optical Shop
21	1	1220	Restaurant	Tram Station	Dessert Shop	Stadium	Gun Range	Electronics Store	Food Truck	Dog Run	Frozen Yogurt Shop	Fried Chicken Joint

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Methodology

The final table we merged together from the bits and pieces shows every aspect we're looking for in one place.

|	District number	Postal code	Price per m2 in HUF	Monthly rent in HUF	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	I.	1010	3 948	321 000	47.4968	19.0375	1	Café	Hungarian Restaurant	Plaza	Historic Site	Coffee Shop	Scenic Lookout	Pub	Bistro	Hotel	Park
1	II.	1020	3 624	353 000	47.5393	18.9869	3	Park	Track	Playground	Food	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
2	III.	1030	2 788	166 000	47.5672	19.0369	5	Dog Run	Heliport	Train Station	Baseball Field	Electronics Store	Eastern European Restaurant	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint
3	IV.	1040	2 663	100 000	47.5649	19.0913	1	Grocery Store	Pharmacy	Tram Station	Park	Hungarian Restaurant	Fast Food Restaurant	Stationery Store	Convenience Store	Performing Arts Venue	Farmers Market
4	V.	1050	3 336	198 000	47.5002	19.0520	1	Italian Restaurant	Hotel	Hungarian Restaurant	Restaurant	Coffee Shop	Bistro	Wine Bar	Dessert Shop	Plaza	Sandwich Place
5	VI.	1060	4 477	322 000	47.5099	19.0626	1	Pub	Coffee Shop	Cosmetics Shop	Clothing Store	Women's Store	Italian Restaurant	Indian Restaurant	Thai Restaurant	Theater	Gym
6	VII.	1070	3 953	267 000	47.5027	19.0734	1	Hotel	Coffee Shop	Bar	Café	Restaurant	Music Store	Burger Joint	Supermarket	Garden	Cocktail Bar
7	VIII.	1080	3 357	198 000	47.4894	19.0707	1	Coffee Shop	Hotel	Gastropub	Italian Restaurant	Plaza	Clothing Store	Café	Electronics Store	Hostel	Bakery
8	IX.	1090	3 232	160 000	47.4649	19.0916	4	Train Station	Electronics Store	Office	Yoga Studio	Food & Drink Shop	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
9	X.	1100	2 429	88 000	47.4821	19.1575	2	Tram Station	Bus Stop	Brewery	Grocery Store	Fruit & Vegetable Store	Arts & Entertainment	Deli / Bodega	Athletics & Sports	Paper / Office Supplies Store	Yoga Studio
10	XI.	1110	3 078	200 000	47.4593	19.0187	1	Food	Plaza	Playground	Pizza Place	Gym	Pharmacy	Fast Food Restaurant	Bistro	Yoga Studio	Fried Chicken Joint

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11	XII.	1120	3 568	314 000	47.4991	18.9905	1	Park	Platform	Hungarian Restaurant	Grocery Store	Playground	Dessert Shop	Pizza Place	Pharmacy	Bus Stop	Eastern European Restaurant
12	XIII.	1130	3 331	186 000	47.5355	19.0709	1	Grocery Store	Café	Coffee Shop	Restaurant	Diner	Sporting Goods Shop	Indian Restaurant	Fried Chicken Joint	Soup Place	Chinese Restaurant
13	XIV.	1140	3 106	153 000	47.5225	19.1147	1	Bus Stop	Eastern European Restaurant	Thrift / Vintage Store	Pizza Place	Burger Joint	Lottery Retailer	Music Venue	Tennis Court	Farmers Market	Cosmetics Shop
14	XV.	1150	1 947	90 000	47.5589	19.1193	2	Bus Stop	Grocery Store	Supermarket	Restaurant	Pizza Place	Gymnastics Gym	Concert Hall	Food & Drink Shop	Garden Center	Soccer Stadium
15	XVI.	1160	2 250	90 000	47.5183	19.1919	1	Dessert Shop	Soccer Stadium	Plaza	Paintball Field	Gym / Fitness Center	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
16	XVII.	1170	1 923	70 000	47.4803	19.2667	1	Restaurant	Playground	Bakery	Food	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain	Food Truck
17	XVIII.	1180	1 957	95 000	47.4281	19.2098	2	Bus Stop	Playground	Tram Station	Food & Drink Shop	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
18	XIX.	1190	2 000	88 000	47.4457	19.1430	0	Bus Stop	Salon / Barbershop	Yoga Studio	Food & Drink Shop	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Fountain
19	XX.	1200	2 143	75 000	47.4333	19.1193	2	Bus Station	Tram Station	Grocery Store	Bus Stop	Fountain	Garden	Gaming Cafe	Furniture / Home Store	Fruit & Vegetable Store	Frozen Yogurt Shop
20	XXI.	1210	2 015	87 000	47.4244	19.0661	1	Grocery Store	Beer Garden	Clothing Store	Light Rail Station	Bus Stop	Cosmetics Shop	Chinese Restaurant	Pedestrian Plaza	Gym	Optical Shop
21	XXII.	1220	1 926	88 000	47.4250	19.0317	1	Restaurant	Tram Station	Dessert Shop	Stadium	Gun Range	Electronics Store	Food Truck	Dog Run	Frozen Yogurt Shop	Fried Chicken Joint

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Results

- Suburban districts are a lot cheaper but there's less to do with one's free time

- Prices in the city center are incredibly high so it is worth considering whether or not the amountof available venues is worth the money

- Best options seem to be **8th**, **9th** or **13th** district for people who use public transport

- **3rd**, **14th**, **19th** districts are recommended for car owners or families - city is not too far but the same amount of money gets you more.
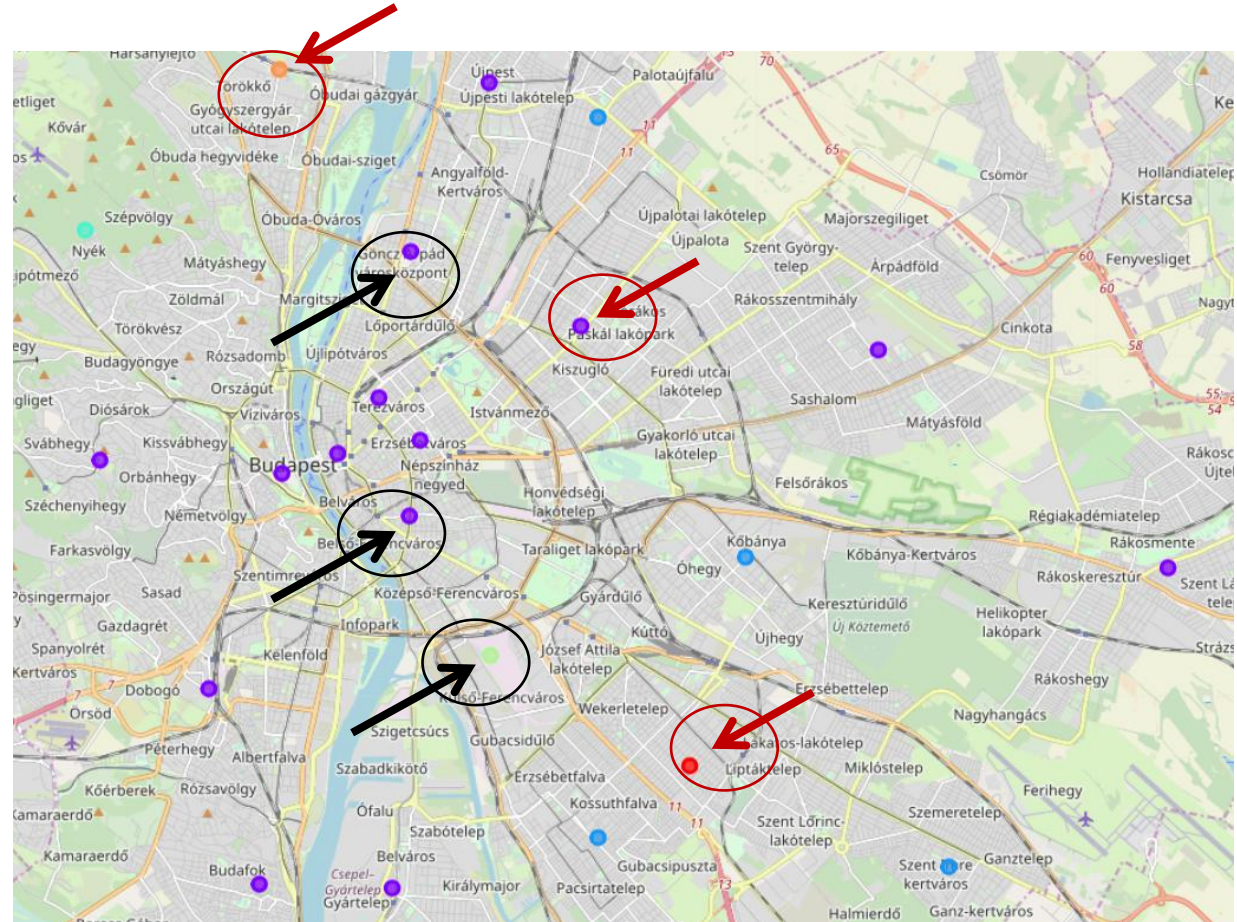
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Recommendation for future research

- 23rd district has no data currently - should be included for accuracy

- Individual variables to be considered - car ownership, office location, salary, etc.

- Information could be used in an application

- The analysis included average values only so individual districts could be further examined

Conclusion

- Rental price differences among districts can be humongous so it is worth considering all the individual necessities before deciding on a location

- There are a number of alternatives if one's a bit tigher on budget