

Preserving Lifestyle as an Expat on Other Continent

- Moving from Toronto, Canada to Bucharest, Romania –

Dumitrescu Florin Bogdan

September 13, 2019

1. Introduction

1.1. The Background

According to the Romanian Ministry of Foreign Affairs (<http://www.mae.ro/node/2089>), the statistics available for the year 2018 shows that for the first two months the total value of the bilateral trade between Canada and Romania was USD 26.65 million. The value of the Romanian exports to Canada amounts to USD 17.55 million, and the value of imports of USD 9.10 million. At the level of the whole year 2017, according to the Romanian statistics, the total trade was 341.8. USD million, of which USD 213.5 million represented Romanian exports (an increase of 82% compared to 2016) and USD 128.3 million represented imports (an increase of 58.2% compared to 2016).

Canada ranks 29th among the top foreign investors in Romania in terms of subscribed share capital.

Regarding the structure and territorial orientation of Canadian investments in Romania, most of the joint ventures are active in the electronic industry, the light industry, auto constructions and spare parts, the agro-food sector, transport, construction, metal manufacturing, tourism, being mainly located in Bucharest, Bihor, Dolj, Bistrita Nasaud, Brasov, Arad, Harghita, Alba, Cluj, Prahova, Salaj, Iasi counties.

According to the Romanian National Statistic Institute, the real estate market is also growing in Bucharest (<http://www.bucuresti.insse.ro/wp-content/uploads/2019/07/Locuinte-terminate-in-Municipiul-Bucuresti-in-anul-2018.pdf>)

According to the last media data, the demand for renting by expats raised in 2018 with 30% to 40% (<http://www.bucuresti.insse.ro/wp-content/uploads/2019/07/Locuinte-terminate-in-Municipiul-Bucuresti-in-anul-2018.pdf>)

Many of this demand are in the north part of Bucharest and the prices per month vary between 700 and 1000 EUR/Month; a modest amount compared with Western Europe average real estate prices; according to this statistic references (<https://www.statista.com/statistics/503274/average-rental-cost-apartment-europe/>)

So renting an apartment in Bucharest is much cheaper (up to 50%) compare to top EU cities but 30 to 40% of the demand goes to the northern part of Bucharest, which is well known for its infrastructure problems like - lack of sewerage, secondary access roads, bad public transport, crowded traffic, etc. (for more info please

read this article (<https://www.wall-street.ro/articol/Real-Estate/238183/dan-cristian-popescu-suntem-mult-in-urma-cu-infrastructura-in-dimitrie-pompeiu.html#gref>).

1.2. The Problem

Therefore, **the problem** is that an expat can afford to rent an apartment compared with other western cities but they are oriented by real estate agencies to rent in a limited area (in full construction development), even if conserving the previous lifestyle and benefits or standards can represent an important factor, along with getting in touch with the local culture and specificities.

This study aims to verify if there are alternatives for renting an apartment in neighborhoods that might have better access to facilities (like restaurants, parks, etc.), while avoiding the well-known problems of some neighborhoods.

1.3. The Benefits

The benefits are for the Canadian expats and not only.

An expat who is about to rent an apartment in Bucharest will be able to see:

1. What is the structure of venues for different Bucharest areas and,
2. particular to Canadian citizens, they will be able to know in advance where they can rent an apartment in order to conserve their life style or where they should rent one if they want to have access to some specific facilities

1.4. The Research Questions

The research questions are:

1. How are distributed city facilities in Toronto - Canada and Bucharest - Romania?
2. If I want to conserve my lifestyle from Toronto, where should I rent an apartment in Bucharest?
3. If I want to have quick access to some specific venues, where should I rent an apartment in Bucharest?
4. If I want to immigrate in Canada and rent an apartment in Toronto, from specific facilities point of view, what neighborhoods are more recommended?

2. Methodology

2.1. Data Acquisition and Cleaning

Data Sources

Data required for this project are listed below, along with their sources:

For Toronto City

- a. List of neighborhoods - https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- b. List of latitudes and longitudes coordinates for neighborhoods - http://cocl.us/Geospatial_data
- c. Venue data - explored using Foursquare API - <https://developer.foursquare.com/>

a. For Bucharest City

- b. List of neighborhoods - https://ro.wikipedia.org/wiki/Lista_cartierelor_din_Bucure%C8%99ti
- c. Latitudes and longitudes coordinates for neighborhoods - Python geopy library will be used because no public service or free web data were found
- d. Venue data - explored using Foursquare API - <https://developer.foursquare.com/>

Data Cleaning and Data Frames

Cleaning data will involve:

1. data exploration
2. data parsing
3. data grouping
4. data concatenation
5. dealing with missing values

2.2 Techniques

After data wrangling, on clean data the following data science techniques will be used:

For Toronto city

1. Web scraping Wikipedia page for Toronto neighborhoods list - using BeautifulSoup library
2. Get latitude and longitude coordinates for Toronto using Geocoder

3. Use Foursquare API to get venue data
4. Group data by neighborhood and taking the mean of the frequency of occurrence of each venue category
5. Perform clustering on the data by using k-means clustering
6. Visualize the clusters in a map using Folium

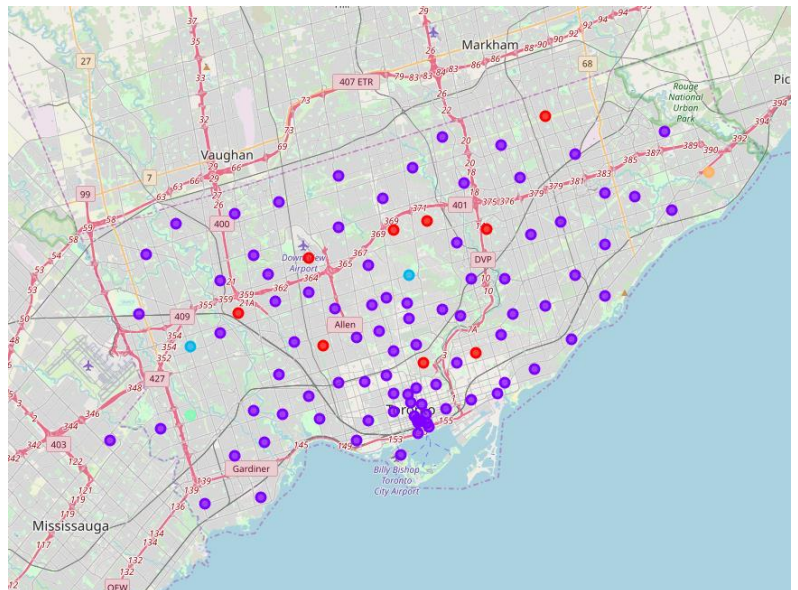
For Bucharest city

1. Web scraping Wikipedia page for Toronto neighborhoods list - using BeautifulSoup library
2. Get latitude and longitude coordinates for Bucharest and Bucharest neighborhoods using Geocoder
3. Use Foursquare API to get venue data
4. Group data by neighborhood and taking the mean of the frequency of occurrence of each venue category
5. Perform clustering on the data by using k-means clustering
6. Visualize the clusters in a map using Folium

3. Results

Toronto – Canada cluster labels and results.

- Cluster 1 - labels = Park, Stores
- Cluster 2 - labels = Restaurants, Shops
- Cluster 3 - labels = Park, Bus Line, Shops
- Cluster 4 - labels = Banks, Women Store, Drugstore
- Cluster 5 - labels = Bars, Women Stores, Diner



Cluster 1 – Toronto, Canada

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
14	Agincourt North, L'Amoreaux East, Milliken, St...	Playground	Park	Women's Store	Donut Shop	Dessert Shop	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant
20	Silver Hills, York Mills	Park	Women's Store	Dumpling Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Eastern European Restaurant
23	York Mills West	Park	Bank	Convenience Store	Women's Store	Dumpling Restaurant	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore
25	Parkwoods	Park	Food & Drink Shop	Women's Store	Drugstore	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant
30	CFB Toronto, Downsview East	Park	Airport	Women's Store	Dumpling Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore
40	East Toronto	Park	Intersection	Coffee Shop	Convenience Store	Drugstore	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant
50	Rosedale	Park	Trail	Playground	Building	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop
74	Caledonia-Fairbanks	Park	Women's Store	Market	Fast Food Restaurant	Comic Shop	Concert Hall	Event Space	Ethiopian Restaurant	Comfort Food Restaurant	Empanada Restaurant
98	Weston	Park	Convenience Store	Women's Store	Dumpling Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore

Cluster 2 – Toronto, Canada

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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	Rouge, Malvern	Fast Food Restaurant	Drugstore	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant	Harbor / Marina
2	Guildwood, Morningside, West Hill	Medical Center	Electronics Store	Pizza Place	Intersection	Breakfast Spot	Rental Car Location	Mexican Restaurant	Doner Restaurant	Diner	Discount Store
3	Woburn	Coffee Shop	Korean Restaurant	Women's Store	Dumpling Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore
4	Cedarbrae	Haikka Restaurant	Bank	Athletics & Sports	Bakery	Thai Restaurant	Caribbean Restaurant	Fried Chicken Joint	Eastern European Restaurant	Dumpling Restaurant	Drugstore
5	Scarborough Village	Playground	Construction & Landscaping	Women's Store	Drugstore	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop
6	East Birchmount Park, Ionview, Kennedy Park	Department Store	Discount Store	Coffee Shop	Hobby Shop	Convenience Store	Dumpling Restaurant	Diner	Dog Run	Doner Restaurant	Donut Shop
7	Claireville, Golden Mile, Oakridge	Bakery	Park	Intersection	Fast Food Restaurant	Metro Station	Bus Line	Bus Station	Soccer Field	Costume Shop	Construction & Landscaping
8	Cliffcrest, Cliffside, Scarborough Village West	Motel	American Restaurant	Department Store	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore
9	Birch Cliff, Cliffside West	Cafe	General Entertainment	Skating Rink	College Stadium	Concert Hall	Dim Sum Restaurant	Event Space	Ethiopian Restaurant	Empanada Restaurant	Electronics Store

Cluster 3 – Toronto, Canada

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
44	Lawrence Park	Park	Bus Line	Swim School	Women's Store	Donut Shop	Diner	Discount Store	Dog Run	Doner Restaurant	Drugstore
100	Kingsview Village, Martin Grove Gardens, Richm...	Mobile Phone Shop	Park	Pizza Place	Bus Line	Donut Shop	Dim Sum Restaurant	Diner	Discount Store	Dog Run	Doner Restaurant

Cluster 4 – Toronto, Canada

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
94	Cloverdale, Islington, Martin Grove, Princess ...	Bank	Women's Store	Drugstore	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant	Fast Food Restaurant

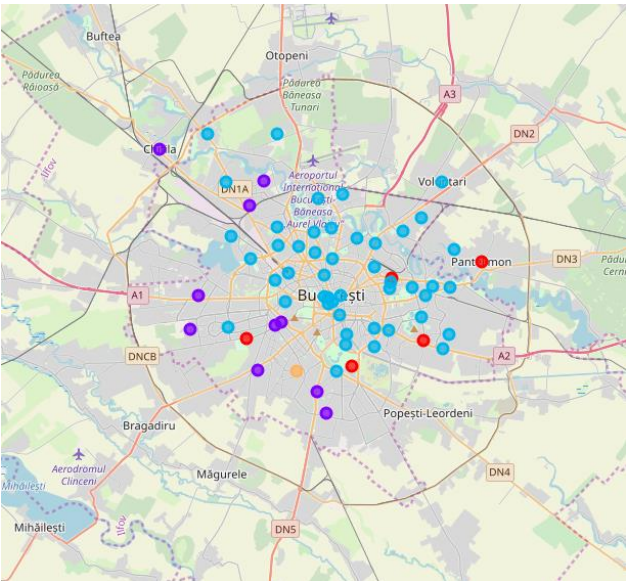
Cluster 5 – Toronto, Canada

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
1	Highland Creek, Rouge Hill, Port Union	Bar	Women's Store	Diner	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Dumpling Restaurant	Fast Food Restaurant

Bucharest – Romania, clusters and results.

- Cluster 1 - labels = Sports
- Cluster 2 - labels = Supermarkets, Pharmacies, Food
- Cluster 3 - labels = High-life
- Cluster 4 - labels = Transit zone
- Cluster 5 - labels = Auto, Food



Cluster 1 – Bucharest, Romania

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
4	Baicului	Pizza Place	Fast Food Restaurant	Gym	Bus Station	Italian Restaurant	Supermarket	Café	Grocery Store	Park	Women's Store
28	Ghencea	Athletics & Sports	Bus Station	Pizza Place	Gym	Stadium	Supermarket	Salon / Barbershop	Theme Restaurant	Romanian Restaurant	Bar
45	Pantelimon	Pizza Place	Market	Women's Store	Event Space	Forest	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant	Farmers Market
52	Salajan	Farmers Market	Gym / Fitness Center	Pool	Bus Station	Pizza Place	Athletics & Sports	Soccer Field	Gym	Eastern European Restaurant	Women's Store
61	Vacaresti	Pool	Italian Restaurant	Basketball Court	Tennis Stadium	Soccer Field	Cocktail Bar	Theme Park Ride / Attraction	Romanian Restaurant	Garden	Gym

Cluster 2 – Bucharest, Romania

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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	13 Septembrie	Supermarket	Salon / Barbershop	Bar	Cosmetics Shop	Pizza Place	Gym / Fitness Center	Lounge	Event Space	Football Stadium	Food Court
6	Brancusi	Supermarket	Park	Pizza Place	Coffee Shop	Café	Bed & Breakfast	Women's Store	Forest	Football Stadium	Food Court
11	Chitila	Supermarket	Pub	Pizza Place	Train Station	Women's Store	Electronics Store	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant
15	Dealul Spirii	Supermarket	Indian Restaurant	Gym / Fitness Center	Piazza	Pizza Place	Coffee Shop	Eastern European Restaurant	Lounge	Bar	Pub
23	Damaraoia	Supermarket	Concert Hall	Women's Store	Event Space	Fountain	Forest	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant
30	Giurgiului	Supermarket	Mobile Phone Shop	Sporting Goods Shop	Bus Station	Jewelry Store	Light Rail Station	Bakery	Farmers Market	Falafel Restaurant	Fountain
36	Millari	Supermarket	Falafel Restaurant	Restaurant	Italian Restaurant	Bus Station	Pharmacy	Women's Store	Event Space	Football Stadium	Food Court
44	Pajura	Restaurant	Supermarket	Department Store	Bus Stop	Women's Store	Eye Doctor	Forest	Football Stadium	Food Court	Food & Drink Shop
48	Piata Resita	Supermarket	Farmers Market	Park	Basketball Court	Women's Store	Eye Doctor	Forest	Football Stadium	Food Court	Food & Drink Shop
51	Rahova	Light Rail Station	Supermarket	Grocery Store	Event Space	Forest	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant	Farmers Market

Cluster 3 – Bucharest, Romania

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
1	Aviatorilor	Italian Restaurant	Bakery	Mediterranean Restaurant	Middle Eastern Restaurant	Supermarket	Romanian Restaurant	Restaurant	Hotel	Cosmetics Shop	Tea Room
2	Aviatiei	Hotel	Bakery	Supermarket	Italian Restaurant	Lebanese Restaurant	Light Rail Station	Dessert Shop	Grocery Store	Gym	Restaurant
3	Balta Alba	Mobile Phone Shop	Sporting Goods Shop	Grocery Store	Bookstore	Cafe	Farmers Market	Shoe Store	Sandwich Place	Jewelry Store	Park
7	Bucuresti Noi	Shop & Service	Dessert Shop	Metro Station	Pharmacy	Supermarket	Gym	Bakery	Theater	Women's Store	Football Stadium
8	Baneasa	Gym	Forest	Spa	Gym / Fitness Center	Electronics Store	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant	Farmers Market
9	Centrul Civic	Cafe	Clothing Store	Coffee Shop	Hotel	Italian Restaurant	Bakery	Burger Joint	Gym / Fitness Center	Pizza Place	Plaza
10	Centrul Istoric	Coffee Shop	Pub	Cafe	Historic Site	Pizza Place	Hotel	Romanian Restaurant	Hookah Bar	Bookstore	Palace
12	Colentina	Rental Car Location	Supermarket	Food & Drink Shop	Fast Food Restaurant	Park	Eastern European Restaurant	Cosmetics Shop	Spa	Hotel	Auto Garage
13	Cotroceni	Italian Restaurant	Bistro	Cafe	Park	Electronics Store	Pedestrian Plaza	Tennis Court	Market	Bar	Jazz Club
14	Crangasi	Cupcake Shop	Pizza Place	Supermarket	Tennis Court	Plaza	Electronics Store	Sandwich Place	Falafel Restaurant	Shoe Store	Farmers Market
16	Diham	Gym / Fitness Center	Cafe	Cocktail Bar	Tennis Stadium	Burger Joint	Soccer Field	Soccer Stadium	Sandwich Place	Multiplex	Bookstore
17	Doamna Ghica	Pharmacy	Grocery Store	Pub	Casino	Doner Restaurant	Bistro	Salon / Barbershop	Supermarket	Dessert Shop	Pizza Place
18	Domeni	Pharmacy	Indian Restaurant	Greek Restaurant	Romanian Restaurant	Roof Deck	Peruvian Restaurant	Park	Farmers Market	Garden	Lebanese Restaurant
19	Dorobanti	Cafe	Romanian Restaurant	Bakery	Sushi Restaurant	Modern European Restaurant	Cheese Shop	Fruit & Vegetable Store	Bookstore	Mediterranean Restaurant	Sandwich Place
20	Dristor	Cupcake Shop	Coffee Shop	Cafe	Farmers Market	Shop & Service	Supermarket	Metro Station	Market	Burger Joint	Drugstore
21	Drumul Taberei	Coffee Shop	Restaurant	Cupcake Shop	Park	Burger Joint	Soccer Field	Farmers Market	Skating Rink	Eastern European Restaurant	Sandwich Place

Cluster 4 – Bucharest, Romania

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
39	Mihai Bravu	Gift Shop	Women's Store	Fried Chicken Joint	Fountain	Forest	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant	Farmers Market

Cluster 5 – Bucharest, Romania

Listed neighborhoods and venues categories are displayed below.

	Neighborhood	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
24	Ferentari	Auto Garage	Women's Store	Event Space	Fountain	Forest	Football Stadium	Food Court	Food & Drink Shop	Fast Food Restaurant

4. Discussion

4.1. Findings

We can split them for each city.

Toronto Findings

- Toronto neighborhoods clustering shows that stores and shops are distributed along the entire city
- Parks are grouped in 2 main clusters (1 and 3)
- Specific women stores are in particular represented in 2 areas (4 and 5)
- Restaurants and dinner places are distributed in 2 clusters – 2 and 5

Bucharest Findings

- Bucharest seems to have a specific area dedicated to sports facilities (Cluster1)
- General facilities that supports family life are groped in cluster 2
- High life area is represented by cluster 3

- There are 2 neighborhoods zones that should be avoided for an expat – clusters 4 and 5

4.2. Recommendations

As recommendations, after comparing this 2 cities, we can say that:

- As an expat, moving from Toronto-Canada or elsewhere into Bucharest, if you are interested in high-life you should target Bucharest neighborhoods from Cluster 3 (47 neighborhoods)
- As an expat, moving from Toronto-Canada or elsewhere into Bucharest, you should avoid Bucharest neighborhoods from Clusters 4 and 5 (2 neighborhoods) because they are high transit zones ore set on periphery
- If you want to go into Toronto – Canada, you should know that the venues are represented in all neighborhoods zones but if you are interested in green areas neighborhoods clusters 1 and 3 might be recommended.
- Same, for Toronto Canada, women’s facilities are represented better by clusters 4 and 5
- If you are interested in restaurants and shops, cluster 2 might be recommended

5. Conclusions

Answering to specific research questions:

1. How are distributed city facilities in Toronto - Canada and Bucharest - Romania?

They are more equally distributed in Toronto-Canada neighborhoods then in Bucharest-Romania

2. If I want to conserve my lifestyle from Toronto, where should I rent an apartment in Bucharest?

If you are passionate about sports and fresh air, in cluster 1, if you want to conserve family facilities, in 2 and if you like to go out, in cluster 3

3. If I want to have quick access to some specific venues, where should I rent an apartment in Bucharest?

General venues like stores and other facilities are grouped in cluster 2 but specific (non-sports) facilities are gropued in cluster3. Despite the high concentration of expats in Pipera neighborhood, cluster 3 gropus 47 neighborhoods, so the options to rent and apartment are much, much more, even 30-40% of the deals are going in Pipera neighborhood due to real estate agents deals with developers

and high business zone concentration.

4. If I want to immigrate in Canada and rent an apartment in Toronto, from specific facilities point of view, what neighborhoods are more recommended?

Venues are more diverse in cluster 2 but green zones are more represented in clusters 1 and 3; for women life-style 4 and 5

6. Future Directions

Grouping Toronto and Bucharest neighborhoods together would provide a better perspective about what neighborhoods are in the same cluster, not intermediate by the label correspondence. Same, grouping some specific venues categories can represent an interesting analysis.