On the spot

Finding the right spot for a burger bar in Budapest

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Introduction

- I work as a data scientist in a business consulting firm in Budapest, Hungary

- One of our customers wants to open a fast food bar and asks our team to help him in this new venture

- My task as a data expert is finding the perfect spot using geolocation and other information

Business Problem

- The aim is to find locations in Budapest that has good amount of possible future customers and low competitive presence

- Who likes and wants to buy burgers? Burgers are more popular among young people
    - Tourists
    - office workers
    - students

- We identified three types of venues where young people can find more likely
    - tourist hot spots
    - Offices
    - Universities

- My task is finding locations in the 23 districts of Budapest where demand is high and competition is low

Data

- To help our customer to find the perfect place I will use the following data:

- Neighborhoods of Budapest, Hungary from Wikipedia:

https://hu.wikipedia.org/wiki/Budapest_v%C3%A1rosr%C3%A9szeinek_list%C3%A1ja

- Latitude and longitude coordinates of the neighborhoods (geocoding API)

- Venues data from Foresquare API

  - Fast food restaurants

  - Tourist attractions

  - Offices

  - Universities

- We will then leverage the data in order to determine which neighborhood is the most appropriate for a new burger bar

Methodology

- During the analysis we have to go through the following tasks:
  - First we have to load the neighborhoods from Wikipedia site - we exclude neighborhoods with less than 1000 inhabitants
  - For each neighborhood we have to collect all fast food restaurants, tourist attractions, offices and universities&colleges data from Foresquare.
  - After that we have to count all venues for all neighborhoods
  - Finally we have to compute the fitness for each neighborhood. Fitness have been defined according the customers preferences so it is a population equivalent per fast food restaurant
- With the biggest fitness score we can easily decide the most appropriate neighborhood to open a new burger bar
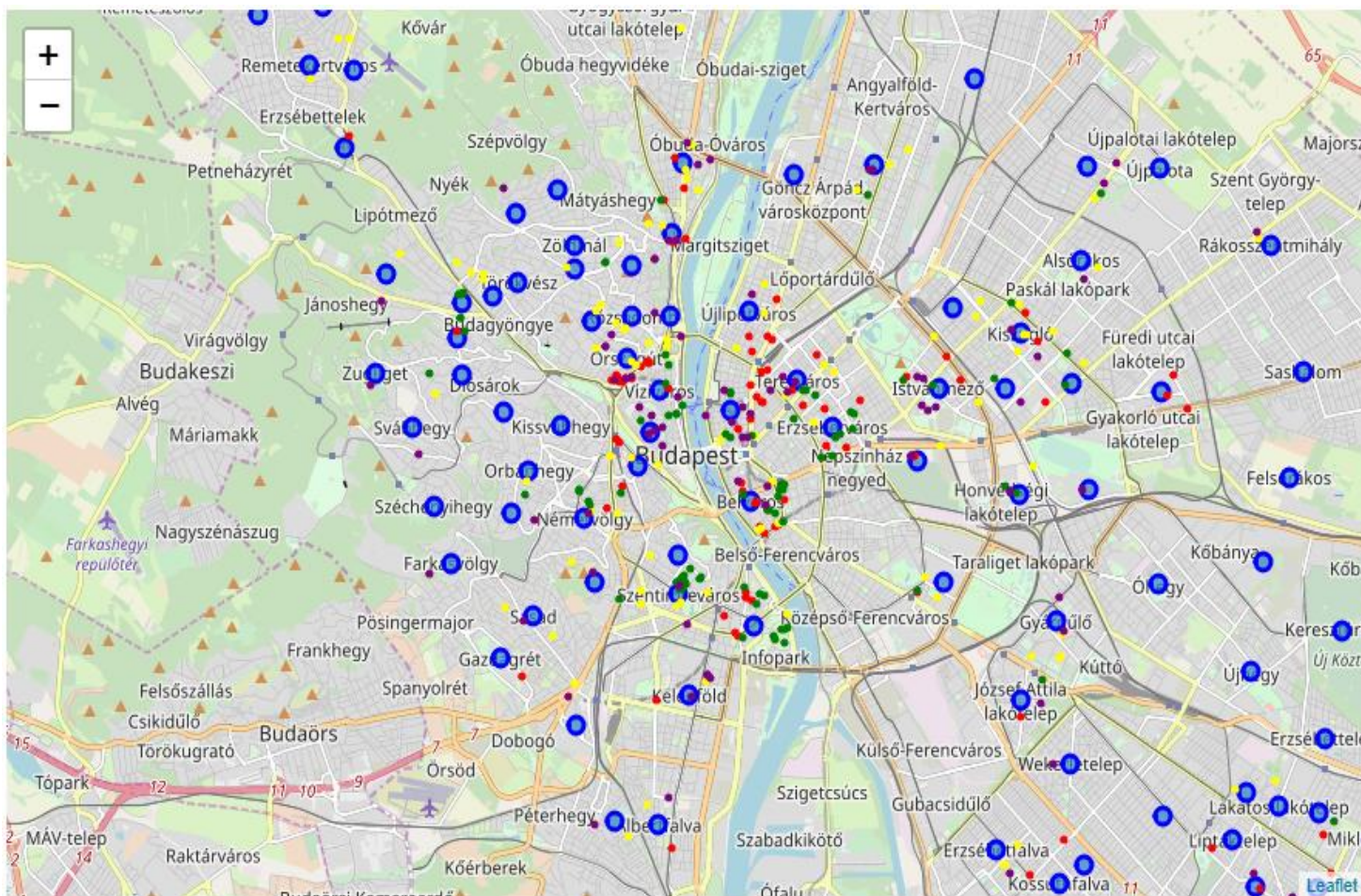
Results
Neighborhoods of Budapest
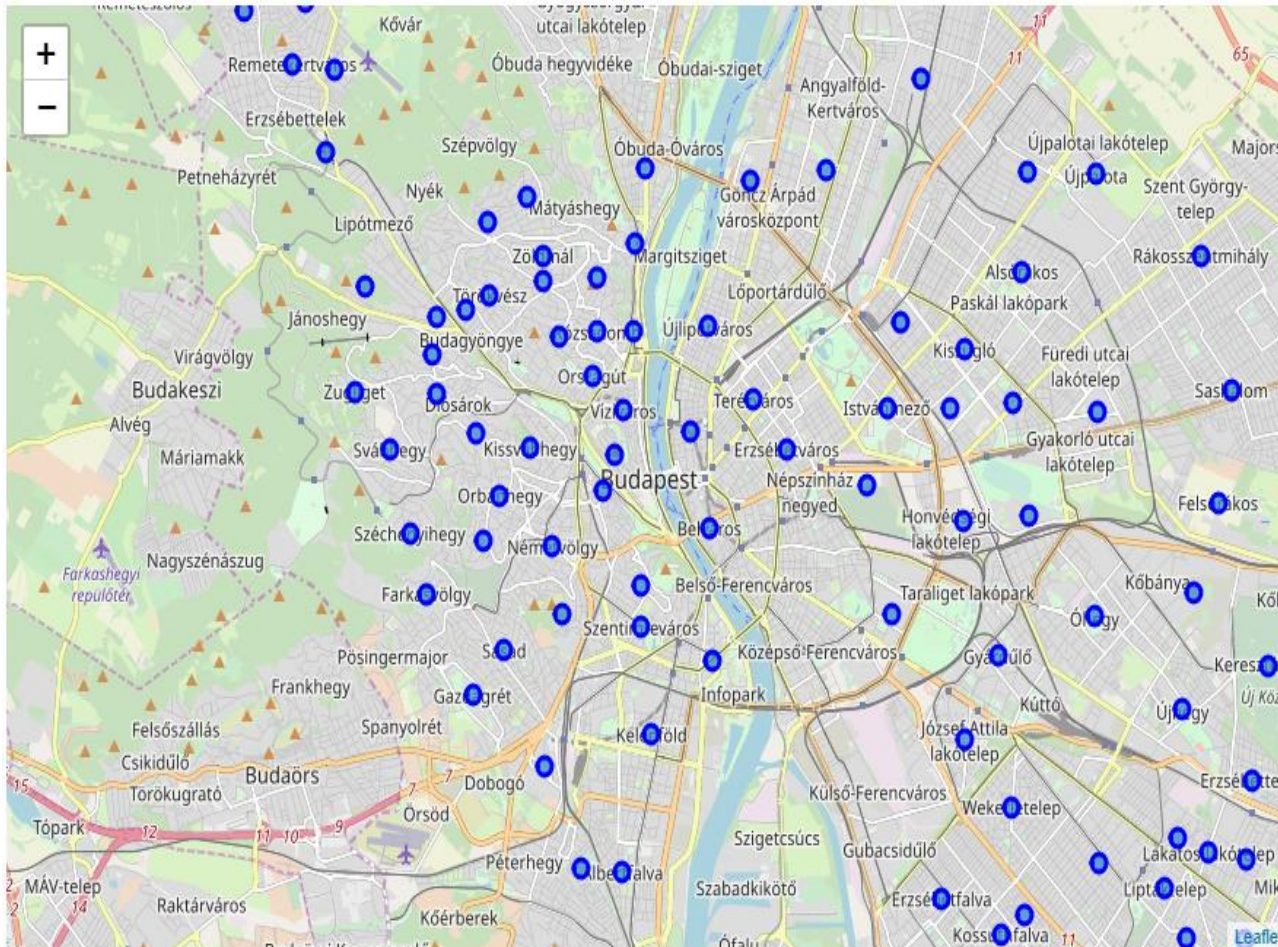
	Neighborhood	District	Population	Latitude	Longitude
0	Akadémiaújtelep	XVII. kerület	2895	47.481613	19.219526
1	Albertfalva	XI. kerület	11845	47.447294	19.034295
2	Alsórákos	XIV. kerület	29023	47.525178	19.128280
3	Angyalföld	XIII. kerület	62006	47.538369	19.082082
4	Árpádföld	XVI. kerület	6186	47.533133	19.198560

Results

Neighborhoods with sample venues

Results

Neighborhoods with highest fitness values

The following table contains the top 5 neighborhoods ordered by fitness level or population equivalent. It also contains the count of each venue type, fast food restaurants, offices, universities and tourist attractions in the neighborhood.

	Neighborhood	District	Population	Latitude	Longitude	FFR counts	Office counts	Uni counts	Tourist spot counts	Fitness
52	Kelenföld	XI. kerület	53332	47.465171	19.041108	1.0	50.0	3.0	6.0	57916.0
117	Szemlőhegy	II. kerület	2753	47.524329	19.028179	0.0	45.0	1.0	6.0	57753.0
126	Törökőr	XIV. kerület	15170	47.507438	19.111503	0.0	43.0	2.0	3.0	56670.0
56	Kispest	XIX. kerület	52349	47.448441	19.146518	0.0	7.0	0.0	0.0	55849.0
44	Herminamező	XIV. kerület	12264	47.518684	19.099723	0.0	44.0	2.0	3.0	54264.0

Results

The winning neighborhood - Kelenföld
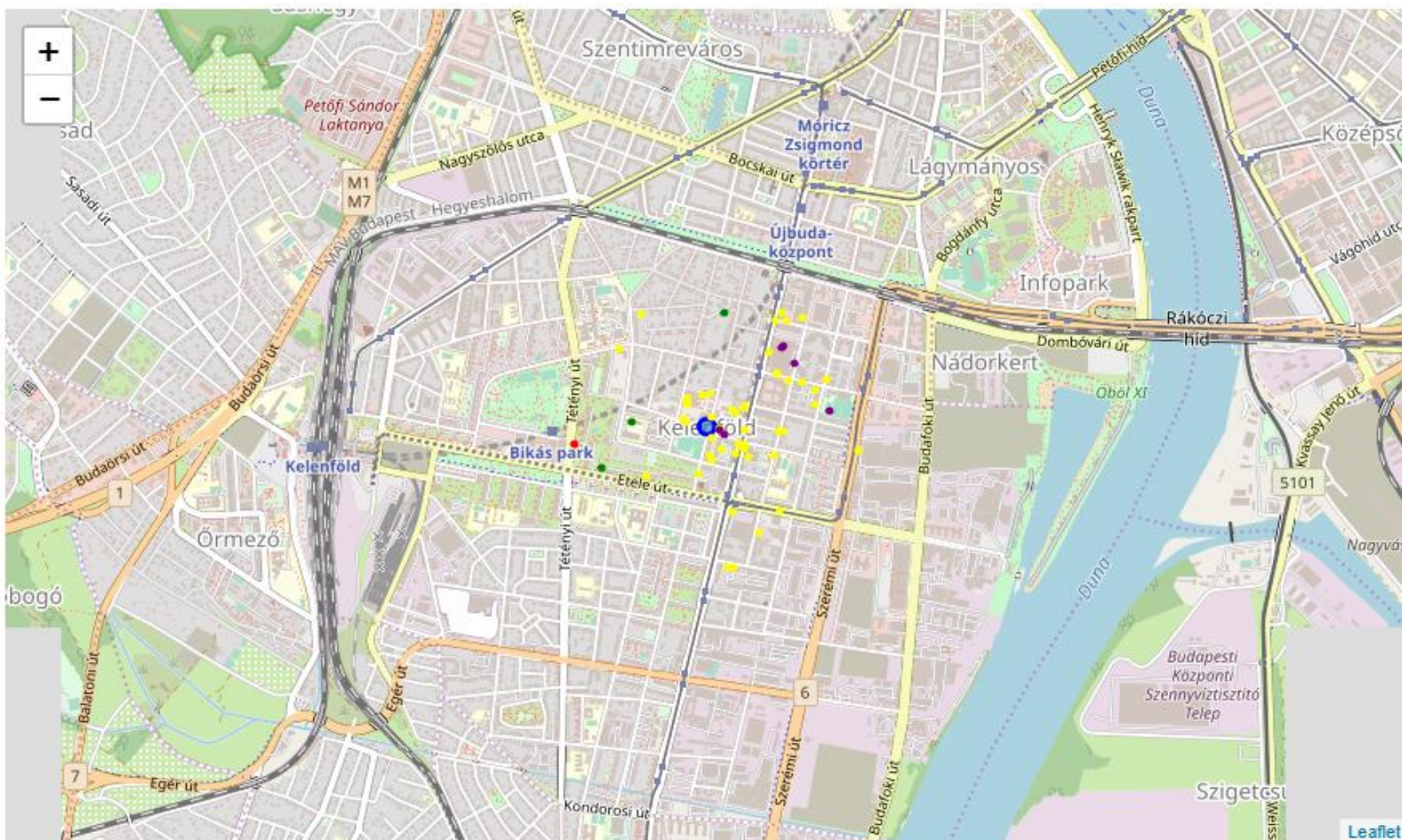
Discussion

The actual approach can be improved with the following extensions:

▶ With the help of the Foresquare API we can query the number of tips for all venues and exclude the least popular venues

▶ Tourist attraction exploration can be improved as well

▶ We can consider also other type of restaurants and food stores which can be also some concurrence

▶ We can consider other source of geolocation information to get a more complete set of venues