# Identifying Locations for Coffee Shops Investors

Karim Haikal
March, 2020

# Business Problem

Identifying a good location to start a coffee shop is a key parameter towards the success of such investment. Thus in this study, we will try to find an optimal location in order to start a Coffee shop in Beirut. Specifically, this report will be targeted to stakeholders interested in opening a Coffee Shop in Beirut, Lebanon.

# Main Parameters & Data Required for Evaluation

1 **Competition**

Number of existing coffee shops in the.

2 **Proximity to universities**

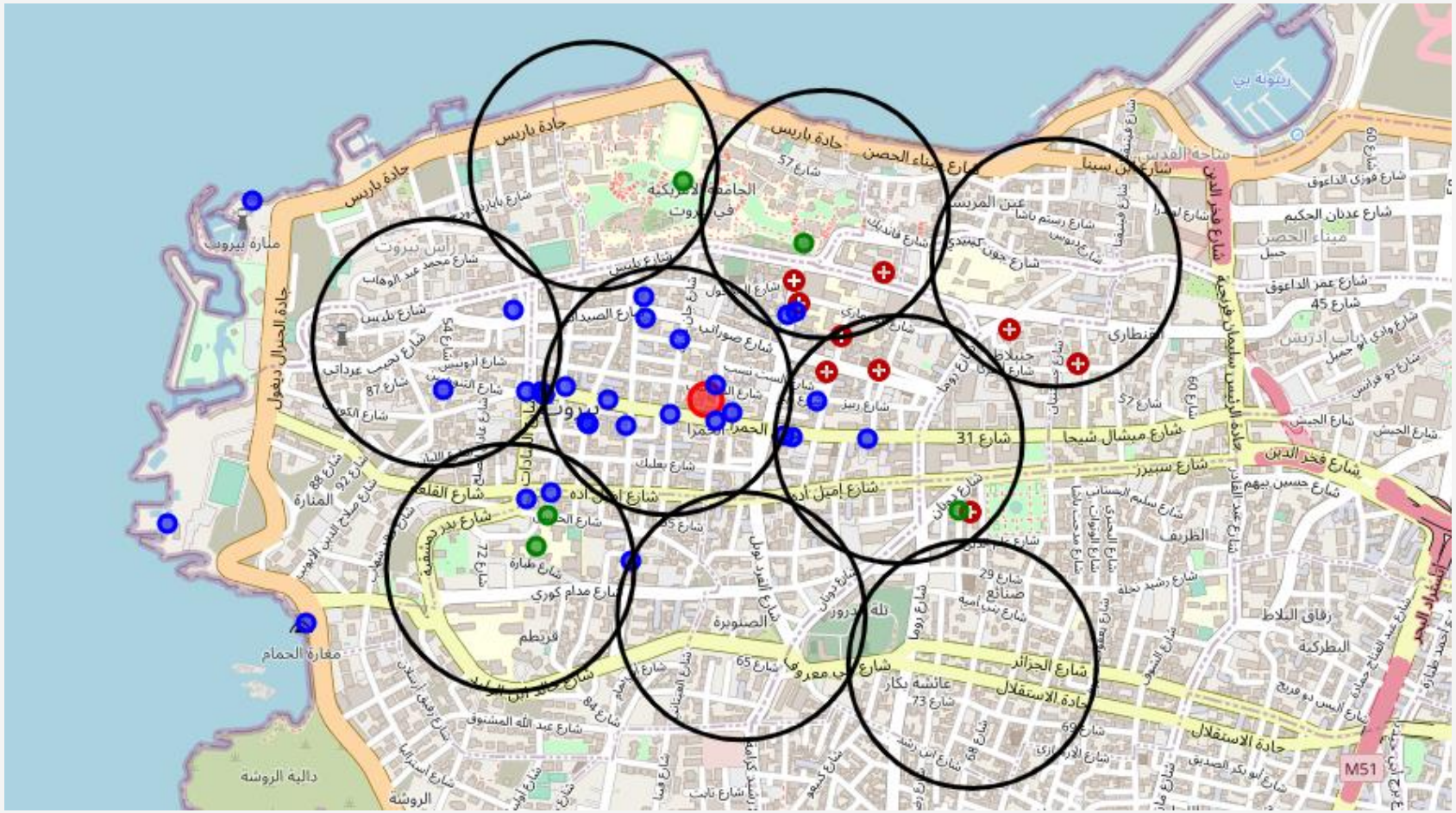
Proximity distance to universities in the neighborhood which would be reflected by the proximity to aggregate center of all the existing universities

3 **Neighborhood segmentation**

The city will be segmented in neighborhood in order to determine the optimal area for investment.

The data sets will be extracted using Foursquare API to extract the coffee shops and universities within a 2 km radius from Beirut center.

# City visualization prior to the evaluation




Location of every coffee shop within 2 km from Beirut center shown in blue whereas all universities existing in this area in green.

Moreover, we have segmented our city in nine (9) neighborhoods in order to assess the best location.

# Main Parameter Calculation

| | Latitude | Longitude | X | Y | Distance from center | Number of coffee shops |
|---|---|---|---|---|---|---|
| 0 | 33.892429 | 35.476874 | 2.408347e+06 | 3.945394e+06 | 655.743852 | 2 |
| 1 | 33.891373 | 35.482951 | 2.408947e+06 | 3.945394e+06 | 556.776436 | 0 |
| 2 | 33.890317 | 35.489028 | 2.409547e+06 | 3.945394e+06 | 953.939201 | 0 |
| 3 | 33.897346 | 35.474931 | 2.408047e+06 | 3.945913e+06 | 700.000000 | 4 |
| 4 | 33.896290 | 35.481009 | 2.408647e+06 | 3.945913e+06 | 100.000000 | 12 |
| 5 | 33.895234 | 35.487087 | 2.409247e+06 | 3.945913e+06 | 500.000000 | 4 |
| 6 | 33.901208 | 35.479067 | 2.408347e+06 | 3.946433e+06 | 655.743852 | 0 |
| 7 | 33.900151 | 35.485145 | 2.408947e+06 | 3.946433e+06 | 556.776436 | 2 |
| 8 | 33.899095 | 35.491223 | 2.409547e+06 | 3.946433e+06 | 953.939201 | 0 |

Calculation of the proximity to the aggregate center of the universities and the density of the existing coffee shops in each neighborhood.

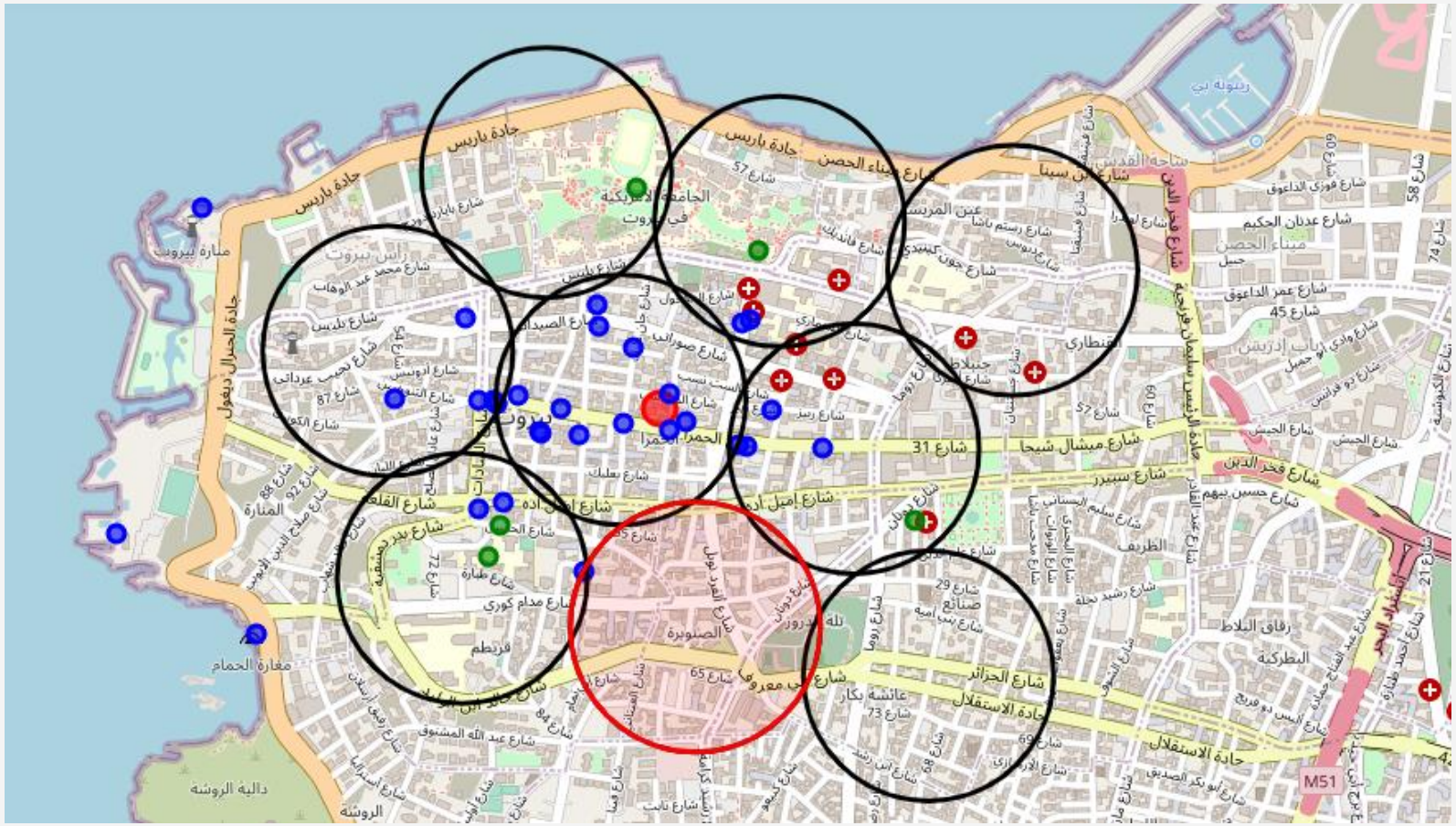
# Evaluation Formula

The assessment of each neighborhood is based on the below formula, where the weight of the proximity factor and competition density is divided 50/50

$$Evaluation\ score =$$

$$\left(1 - \frac{Number\ of\ competitors}{Maximum\ number\ of\ competitors}\right) * 50\% + \left(\frac{Minimun\ Distance\ from\ the\ Aggregate\ center}{Distance\ from\ the\ Aggregate\ center}\right) * 50\%$$

# City visualization post to the evaluation




The result after the evaluation shows the neighborhood highlighted in red as the area with highest evaluation score regarding the investment.

# Top 5 Neighborhoods

The below table shows the top 5 Neighborhoods based on the evaluation scoring for optimal investments

| | Latitude | Longitude | X | Y | Distance from center | Number of coffee shops | Evaluation Scoring |
|---|---|---|---|---|---|---|---|
| 0 | 33.891373 | 35.482951 | 2.408947e+06 | 3.945394e+06 | 556.776436 | 0 | 0.589803 |
| 1 | 33.901208 | 35.479067 | 2.408347e+06 | 3.946433e+06 | 655.743852 | 0 | 0.576249 |
| 2 | 33.899095 | 35.491223 | 2.409547e+06 | 3.946433e+06 | 953.939201 | 0 | 0.552414 |
| 3 | 33.890317 | 35.489028 | 2.409547e+06 | 3.945394e+06 | 953.939201 | 0 | 0.552414 |
| 4 | 33.900151 | 35.485145 | 2.408947e+06 | 3.946433e+06 | 556.776436 | 2 | 0.506469 |

# Conclusion and future directions

After assessing the obtained results, we can notice that the decision making procedure is highly affected by the suggested evaluation formula. Thus changing the weight percentages of any of the parameters or adding new evaluation criteria can have impacts on the results. For this reason, it is very important to identify the weight of each parameter taken into consideration.

The final decision for an on optimal coffee shop location will be made by stakeholders based on additional specific characteristics of neighborhoods and locations in the recommended zone, taking into consideration additional factors like attractiveness of each location, levels of noise / proximity to major roads, real estate availability, prices, social and economic dynamics of every neighborhood etc.