

# Capstone Project - The Battle of Neighborhoods (Week 2)

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## Context:

- Problem statement
- Business case
- Data requirement
- Methodology
- Proposed solution
- Final analysis

# Problem statement

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A couple originally from France residing and working in a small Dutch city called Wageningen. However, at some point, they were thought to move back to their home city in France, Lyon. However, this French couple is looking forward to having the following facilities in their nearby neighborhood

- Local library
- Health center
- Grocery store
- Social center
- Performing Arts Venue

**In order to meet their requirement these couple is looking for a company that can assist in their relocation.**

# Business case

- A fictitious company called RELOCATE ME facilitate retired people to relocate in their preferred city and in return company earn revenue.
- The company proposes the best relocation package considering the specific requirement such as social engagement, partial jobs, medical visits, etc., for retired people



Wageningen



Lyon



# Data requirement

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- RELOCATE ME uses the power of data science to explore cities, taking into account the various needs of retired or old age people. RELOCATE ME uses data from different public sources to find, the better the recommendations for their client.

The following data sets are used to in this case study:

- Foursquare data to find and compare locations
- Public data set about the city of Lyon in France (Click [here](#))

# Methodology

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RELOCATE ME uses the exploratory analysis of the current and requested city of relocation. Moreover, it follows the following methodology to advise better location for elderly people.

- Find the specific requirements such as the Health center, Social center, etc. from the clients.
- Further, it analyzes their current city of living to understand available services and facilities.
- Based-on previous analysis, company start analyzing their requested city based-on their demand
- Further, the company perform categorical analysis from the Foursquare database
- The city divided into the different cluster and each cluster is analyzed taking into account different category.
- Finally, the company advises the best district considering the client's requirements.

# Methodology cont.

## City Lyon in France

Following analysis represents the visualization of Lyon City focusing on following details

- Local library
- Health centre
- Grocery store
- Social centre
- Performing Arts Venue

	name	categories	lat	lng
0	Bblthk	Library	51.967630	5.665581
1	Medisch Centrum De Poort	Medical Center	51.968372	5.665033
2	Toko Indrani	Grocery Store	51.967019	5.663356
3	Egyptian Foodies	Grocery Store	51.965870	5.660700
4	ALDI	Supermarket	51.973753	5.673201
5	Verpleeghuis Rumah Kita, Zinzia Zorggroep	Medical Center	51.970776	5.657255
6	Vilente Costerweg	Hospital	51.967107	5.656565
7	M-Visio	Medical Center	51.967362	5.655505
8	Theater Junushoff	Theater	51.966883	5.661508
9	Fysiotherapie Ingrid Marcusse Wageningen	Physical Therapist	51.975620	5.659310
10	De Wilde Wereld	Theater	51.965150	5.664340
11	Kwadrant Mondzorg	Dentist's Office	51.967171	5.674291
12	MG Dance	Dance Studio	51.963706	5.657567
13	Tandartspraktijk Lawicksepoort	Dentist's Office	51.967575	5.655795
14	Centrum voor Mondzorg Wageningen	Dentist's Office	51.967670	5.655710
15	Bonoort Orthodontist	Dentist's Office	51.967688	5.654775
16	De Dierenarts	Veterinarian	51.972132	5.664228



# Methodology cont.

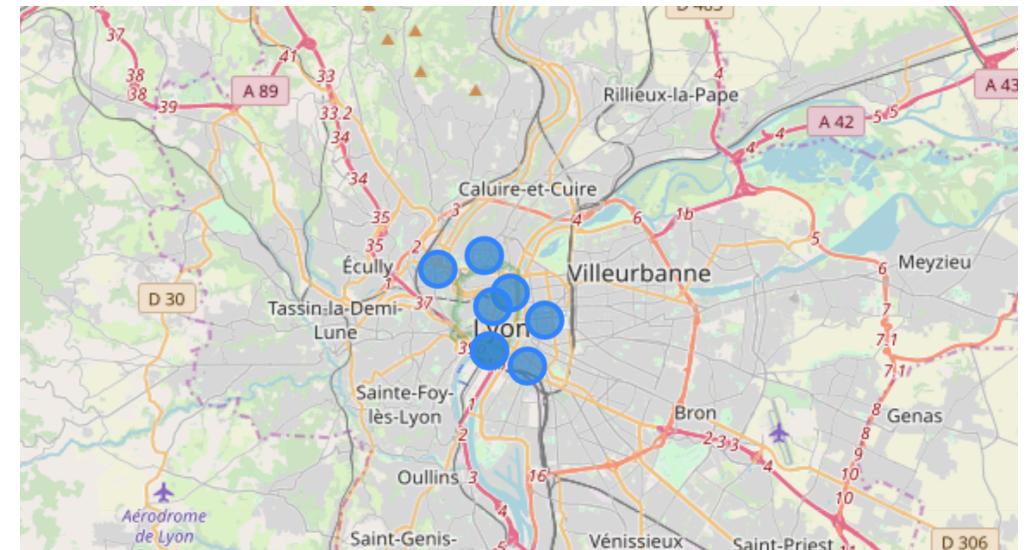
## City Wageningen in Netherlands

Following analysis represents the visualization of Wageningen City focusing on following details

- Local library
- Health centre
- Grocery store
- Social centre
- Performing Arts Venue

	<b>name</b>	<b>categories</b>	<b>lat</b>	<b>lng</b>
0	Simply Market	Grocery Store	45.771040	4.850028
1	Marché Presqu'île	Grocery Store	45.766142	4.831958
2	Monoprix	Department Store	45.763414	4.851751
3	Monop'daily	Grocery Store	45.760523	4.859357
4	Super U	Grocery Store	45.760131	4.837677

82 venues were returned by Foursquare.



Lyon is relatively big city and has five district (Arrondissement). A Wikipedia page (<https://fr.wikipedia.org/wiki/Lyon>) provides succinct details about the different districts in Lyon.

# Methodology cont.

----1er arrondissement----		
	venue	freq
0	Grocery Store	0.28
1	Medical Center	0.15
2	Hospital	0.11
3	Doctor's Office	0.07
4	Supermarket	0.07
5	Theater	0.04
6	Medical Supply Store	0.04
7	Medical Lab	0.04
8	School	0.02
9	Opera House	0.02
10	Library	0.02
11	Food & Drink Shop	0.02
12	Alternative Healer	0.02
13	Chiropractor	0.02
14	Dance Studio	0.02

----2e arrondissement----		
	venue	freq
0	Grocery Store	0.34
1	Medical Center	0.12
2	Supermarket	0.09
3	Alternative Healer	0.06
4	Doctor's Office	0.06
5	Medical Lab	0.06
6	Library	0.06
7	Hospital	0.06
8	Comedy Club	0.03
9	Theater	0.03
10	Discount Store	0.03
11	Opera House	0.03
12	Bookstore	0.00
13	Bistro	0.00
14	Social Club	0.00

----3e arrondissement----		
	venue	freq
0	Grocery Store	0.37
1	Medical Center	0.14
2	Hospital	0.07
3	Supermarket	0.07
4	Doctor's Office	0.07
5	Medical Lab	0.05
6	Food & Drink Shop	0.05
7	Medical Supply Store	0.02
8	Non-Profit	0.02
9	Discount Store	0.02
10	Department Store	0.02
11	Opera House	0.02
12	Comedy Club	0.02
13	Theater	0.02
14	Library	0.02

----4e arrondissement----		
	venue	freq
0	Doctor's Office	0.15
1	Medical Center	0.15
2	Grocery Store	0.12
3	Hospital	0.10
4	Theater	0.08
5	Alternative Healer	0.08
6	Library	0.06
7	Supermarket	0.04
8	Medical Lab	0.04
9	Home Service	0.04
10	Chiropractor	0.02
11	Business Service	0.02
12	Shopping Mall	0.02
13	School	0.02
14	Opera House	0.02

----5e arrondissement----		
	venue	freq
0	Grocery Store	0.27
1	Medical Center	0.13
2	Hospital	0.09
3	Supermarket	0.09
4	Medical Lab	0.07
5	Doctor's Office	0.04
6	Theater	0.04
7	Library	0.04
8	Alternative Healer	0.04
9	School	0.02
10	Opera House	0.02
11	Dance Studio	0.02
12	Massage Studio	0.02
13	Chiropractor	0.02
14	Medical Supply Store	0.02

----6e arrondissement----		
	venue	freq
0	Grocery Store	0.29
1	Medical Center	0.21
2	Supermarket	0.13
3	Alternative Healer	0.05
4	Medical Lab	0.05
5	Library	0.05
6	Hospital	0.05
7	Miscellaneous Shop	0.03
8	Theater	0.03
9	Comedy Club	0.03
10	Department Store	0.03
11	Discount Store	0.03
12	Doctor's Office	0.03
13	Optical Shop	0.00
14	Nightclub	0.00

----7e arrondissement----		
	venue	freq
0	Grocery Store	0.34
1	Medical Center	0.12
2	Supermarket	0.09
3	Alternative Healer	0.06
4	Doctor's Office	0.06
5	Medical Lab	0.06
6	Library	0.06
7	Hospital	0.06
8	Comedy Club	0.03
9	Theater	0.03
10	Discount Store	0.03
11	Opera House	0.03
12	Bookstore	0.00
13	Bistro	0.00
14	Social Club	0.00

----8e arrondissement----		
	venue	freq
0	Theater	0.26
1	Grocery Store	0.22
2	Library	0.12
3	Medical Center	0.08
4	Hospital	0.04
5	Convenience Store	0.04
6	Performing Arts Venue	0.02
7	College Library	0.02
8	Department Store	0.02
9	Doctor's Office	0.02
10	Café	0.02
11	Gourmet Shop	0.02
12	Bookstore	0.02
13	Opera House	0.01
14	Art Gallery	0.01

## Frequency analysis of most visited sites

----9e arrondissement----		
	venue	freq
0	Doctor's Office	0.18
1	Medical Center	0.18
2	Hospital	0.09
3	Supermarket	0.09
4	Library	0.09
5	Home Service	0.06
6	Alternative Healer	0.06
7	Massage Studio	0.03
8	Theater	0.03
9	Shopping Mall	0.03
10	School	0.03
11	Optical Shop	0.03
12	Grocery Store	0.03
13	Medical Supply Store	0.03
14	Medical Lab	0.03

Most visited hospitals, supermarket and library

Most visited hospitals, supermarket and library

# Proposed solution cont.

Considering the variability in data, total 7 cluster are assigned and top 10 most visited venues in the terms of primary client query is analyzed. The following table shows the top most visited sites.

	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	1er arrondissement	Grocery Store	Medical Center	Hospital	Doctor's Office	Supermarket	Medical Lab	Theater	Medical Supply Store	Opera House	Comedy Club
1	2e arrondissement	Grocery Store	Medical Center	Supermarket	Alternative Healer	Medical Lab	Hospital	Library	Doctor's Office	Opera House	Theater
2	3e arrondissement	Grocery Store	Medical Center	Doctor's Office	Supermarket	Hospital	Food & Drink Shop	Medical Lab	Discount Store	Department Store	Theater
3	4e arrondissement	Doctor's Office	Medical Center	Grocery Store	Hospital	Alternative Healer	Theater	Library	Medical Lab	Home Service	Supermarket
4	5e arrondissement	Grocery Store	Medical Center	Supermarket	Hospital	Medical Lab	Alternative Healer	Theater	Library	Doctor's Office	Chiropractor
5	6e arrondissement	Grocery Store	Medical Center	Supermarket	Alternative Healer	Medical Lab	Hospital	Library	Discount Store	Theater	Department Store
6	7e arrondissement	Grocery Store	Medical Center	Supermarket	Alternative Healer	Medical Lab	Hospital	Library	Doctor's Office	Opera House	Theater
7	8e arrondissement	Theater	Grocery Store	Library	Medical Center	Convenience Store	Hospital	Doctor's Office	Bookstore	Performing Arts Venue	Gourmet Shop
8	9e arrondissement	Medical Center	Doctor's Office	Supermarket	Hospital	Library	Home Service	Alternative Healer	Optical Shop	Medical Lab	Grocery St 

# Final analysis

## Cluster 1:

This cluster has most visited medical center, doctor's office followed by supermarket, hospital and library.

	Borough	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
8	9e arrondissement	1	Medical Center	Doctor's Office	Supermarket	Hospital	Library	Home Service	Alternative Healer	Optical Shop	Medical Lab	Grocery Store

## Cluster 5:

This cluster has most visited doctor's office followed by grocery store and hospital.

	Borough	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
3	4e arrondissement	5	Doctor's Office	Medical Center	Grocery Store	Hospital	Alternative Healer	Theater	Library	Medical Lab	Home Service	Supermarket

# Conclusion

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Based-on analysis of different cluster the company RELOCATE ME found that district 9e arrondissement and 4e arrondissement have most visited Health center, Grocery store, Library along with social center, Performing Arts Venue. These two options could be the best match for their clients. Moreover, it also meets the client's basic requirement, defined at the beginning of the problem.

*Thanks for choosing us, happy to help*

