

Moving to Lyon !



Introduction

Where should we look for a flat in Lyon ?

After 6 years in Asia and Italy, I now plan to come back to my city Lyon, in France !



I have budget of 1000€ max for the flat, but if the neighborhood is less attractive for me, I want to pay less.
So I want to define a maximum rent for each neighborhood above which I will not consider the offer. This maximum price will depend on three factors :



How far is the neighborhood from my job located at the East Hospital of Lyon by public transportation



How many pizzerias and italian restaurants are in walking distance (I miss Italy)



How many Asian restaurants are closeby (I miss Asia too)



Methodology

I will set my initial budget to 1000€ per month. Then, I will ponderate as follows:

- The distance to my working place by public transportation will generate a malus of 100€ per 5 minutes. In other words, I'm OK for a flat up to 1000€ at work, but if the travel time to work is 30 minutes, my limit will be $1000 - 600 = 400$ € per month.
- The presence of a pizzeria in the 100m around the neighborhood center will generate a bonus of 10€. Then, between 100 and 1100m, the bonus will be linearly decreasing with the distance (i.e. a pizzeria at a distance of 600m will generate a bonus of 5€). This bonus is cumulative (i.e. having a pizzeria at 50m and another at 600m will generate a total bonus of 15€). The weighted number of pizzeria nearby will be called the pizzeria index
- For the Asian restaurant, it is the same except that, because they are more rare, the bonus will be 10€ up to 200m, and will linearly decrease to 2200m).



THE
PIZZERIA
INDEX

THE ASIAN
RESTAURANT
INDEX

Datasets

For this capstone, I will merge three sources of data :

Neighborhoods names and limits will be downloaded from the Lyon metropole website. It includes not only Lyon but also some close cities (<https://data.grandlyon.com/>)

Travel time to the city center will be computed using the HERE api (<https://developer.here.com/>)

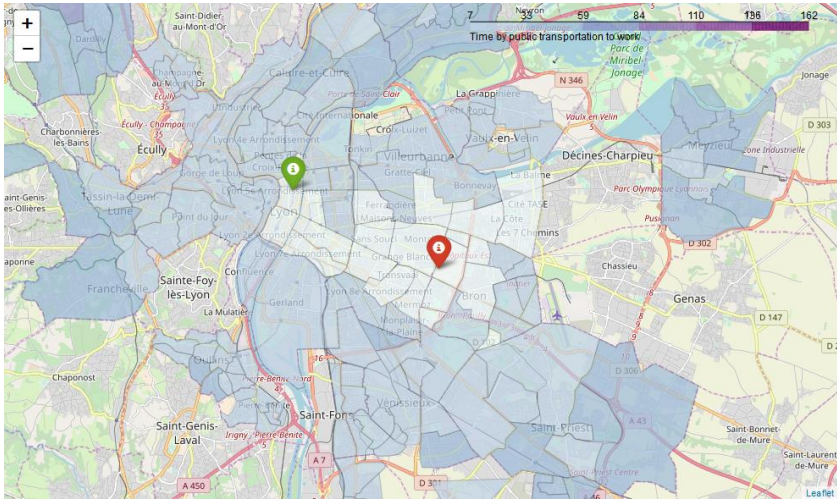
Number of Pizzerias and Asian Restaurants will be computed using Foursquare.



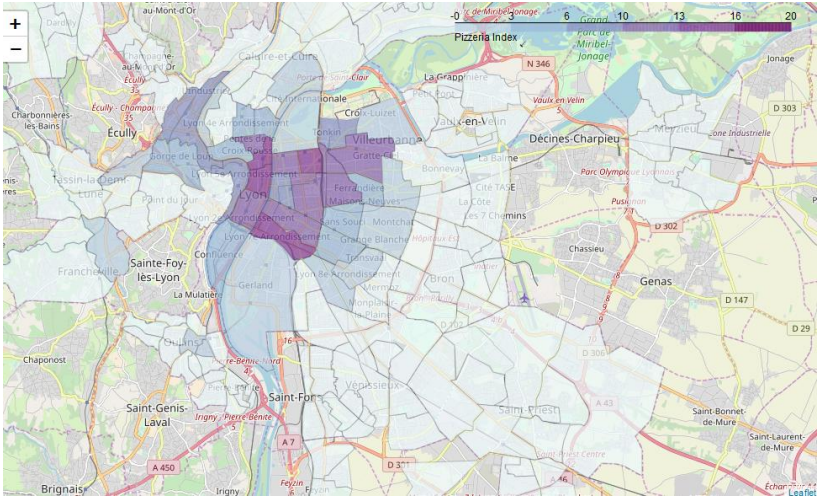
Results

On these maps, the green marker correspond to the city center and the red one to my work.

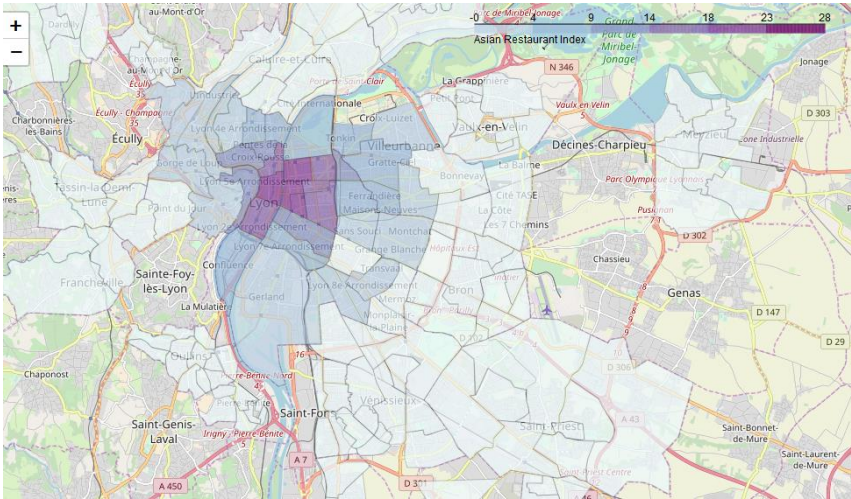
Time to work



Pizzerias

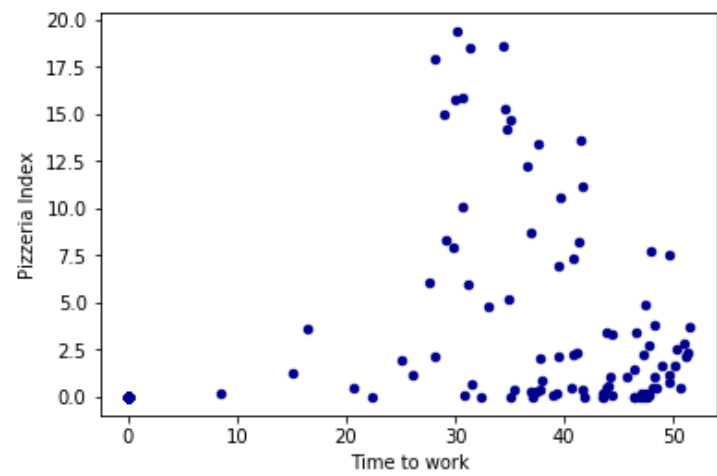


Asian Restaurants

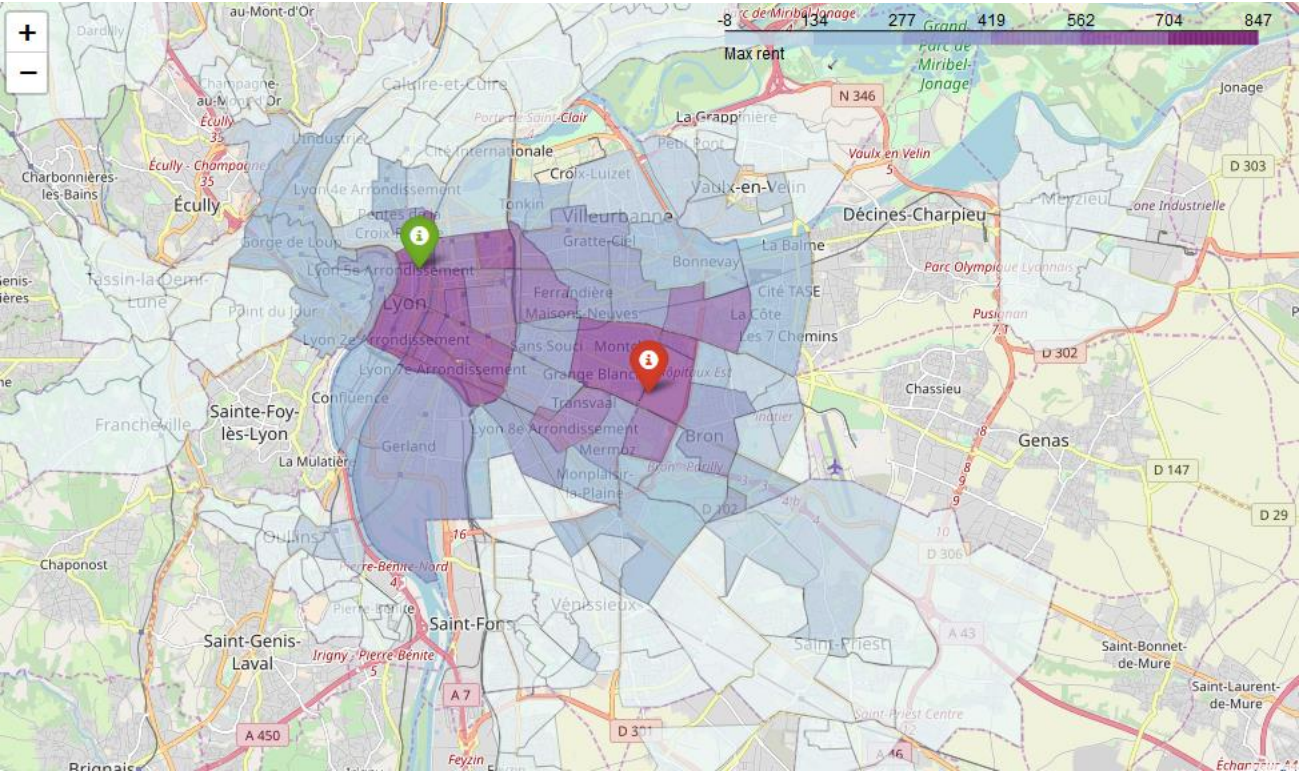


Time to work is minimal close to the working place (obviously)
Pizzerias and Asian Restaurants are maximal close to the city center

Results



	Latitude	Longitude	Code	Distance to city center	Time to work	Pizzeria Index	Asian Restaurant Index	Maximum Rent
Quartier								
Quartier Vinatier	45.7428	4.89998	S7877	5.534371	8.500000	0.145	0.7000	838.450000
Quartier Bellecour Cordeliers	45.7616	4.83513	S5307	0.272293	31.266667	18.483	25.3220	812.716667
Quartier Bas des Pentes Presqu'île	45.7684	4.83574	S5243	0.489078	30.083333	19.375	20.7580	799.663333
Quartier Bellecour Carnot	45.7536	4.83012	S5308	1.237167	28.950000	14.972	20.7885	778.605000
Quartier Mutualité Préfecture Moncey	45.759	4.84389	S5240	0.851747	30.733333	10.095	27.4935	761.218333
Quartier Monchat	45.7479	4.88634	S5239	4.331107	16.500000	3.589	5.2705	758.595000
Quartier Jean Macé	45.7453	4.8439	S5320	2.174541	28.066667	17.899	12.4180	741.836667
Quartier Genêts	45.7503	4.90281	S5434	5.443805	15.116667	1.271	1.6530	726.906667
Quartier Guillotière	45.7499	4.84856	S5319	1.867438	30.650000	15.840	16.5625	711.025000
Quartier Brotteaux	45.7671	4.85564	S5234	1.591180	34.416667	18.595	20.7980	705.596667



Overall, there is no perfect neighborhood. Closer to the city center means more pizzerias and asian restaurants, but further from my work and vice versa.

So many neighborhoods can be considered as optimal... depending on how you weight the importance of the work travel time and number of pizzerias

According to my own weighting, in the top 10, I have both neighborhoods with very few pizzerias but very close to my work (e.g. Vinatier) or other in the city center (e.g. Bellecour Cordeliers). Maybe a good compromise would be Monchat (Pizza and Asian Restaurant > 3 and travel time distance < 20 minutes)

Conclusion

The most difficult is not to find and process the data, but to decide the weight of each factor ! Also, I should consider other factors, such as the vicinity of parks, and so on...

I also realize that it may not make sense to have a linear scale for the Asian Restaurant Index and the Pizzeria Index. There is a higher difference between two neighborhoods having 1 or 2 pizzerias closeby than two others having 21 or 22 pizzerias. A simple way to solve this problem would be to use the square root of the pizzeria and asian restaurant index.

But with this data, I would definitively choose Montchat !