Finding the best city in France

INTRODUCTION

- Background: The company ‘SUNSHINE’ is planning to start a consulting service to restaurants , providing new strategy to cope with COVID19.

-Objective: To find the best city in France where it has the most restaurants and hotels.

DATA ACQUISITION & CLEANING

- Data Source: Internet(https://simplemaps.com/data/fr-cities) & Foursquare API

- Contents of Data: Main 471 cities in France, Latitude, Longitude, Population and Venues

- Data cleaning process through Python panda & numpy

DATA ACQUISITION & CLEANING

	city	latitudes	longtitudes	population
0	Paris	48.8566	2.3522	11020000.0
1	Nice	43.7034	7.2663	1006402.0
2	Toulouse	43.6045	1.4440	968638.0
3	Marseille	43.2964	5.3700	870018.0
4	Rennes	48.1147	-1.6794	727357.0

- Example of the table after the acquisition and cleaning

DATA ANALYSIS & METHODOLOGY

- In total, there are 5545 venues with the search criteria of 100 limits on venues and the radius 500 meters for each city given latitude and longitude information.
- There are 331 unique categories of venue and can look at the top 5 venue category and create a table of top venue by each each city as an example below

	Neighborhood	1st Most Common Venue
0	Abbeville	Hotel
1	Agde	French Restaurant
2	Agen	Multiplex
3	Aix-en-Provence	French Restaurant
4	Aix-les-Bains	Italian Restaurant

DATA ANALYSIS& METHODOLOGY

- Identifying the fact that there is common venue category in several cities.

- Hence, we use unsupervised learning K-means algorithm to cluster the cities.

- For example, we run K-Means to cluster the cities into 5 clusters and merge table with cluster labels for each city

DATA ANALYSIS& METHODOLOGY

	city	latitudes	longtitudes	population	Cluster Labels	1st Most Common Venue
0	Paris	48.8566	2.3522	11020000.0	4.0	French Restaurant
1	Nice	43.7034	7.2663	1006402.0	1.0	Hotel
2	Toulouse	43.6045	1.4440	968638.0	0.0	French Restaurant
3	Marseille	43.2964	5.3700	870018.0	0.0	French Restaurant
4	Rennes	48.1147	-1.6794	727357.0	4.0	Creperie

- Example of clustering table

RESULTS

- Based on the clustering algorithm, we find that cluster label 0 has French restaurant and cluster label1 has hotel as the most common venue.

- It is also important that we look at the city that has the highest population since it is related to the volume of restaurant and hotel activity

- We can see that Toulouse and the Nice have the highest in each label.

RESULTS

	city	population	Cluster Labels	1st Most Common Venue
2	Toulouse	968638.0	0.0	French Restaurant
3	Marseille	870018.0	0.0	French Restaurant
7	Montpellier	607896.0	0.0	French Restaurant
8	Lyon	516092.0	0.0	Bar
9	Rouen	494382.0	0.0	French Restaurant
...	...	...	...	...
452	Mauriac	NaN	0.0	French Restaurant
456	Ambert	NaN	0.0	Optical Shop
457	Forcalquier	NaN	0.0	French Restaurant
468	Florac	NaN	0.0	French Restaurant
470	Castellane	NaN	0.0	French Restaurant

130 rows × 4 columns

	city	population	Cluster Labels	1st Most Common Ve
1	Nice	1006402.0	1.0	Hotel
13	Brest	300300.0	1.0	Hotel
37	Belfort	114445.0	1.0	Stadium
40	Montreuil	109897.0	1.0	Hotel
50	Dunkerque	87353.0	1.0	Hotel
...	...	...	...	...
414	Figeac	NaN	1.0	Kids Store
417	Villefranche-de-Rouergue	NaN	1.0	Pub
420	Apt	NaN	1.0	Hotel
422	Avallon	NaN	1.0	Hotel
465	Sainte-Menehould	NaN	1.0	Gym

62 rows × 4 columns

DISCUSSION

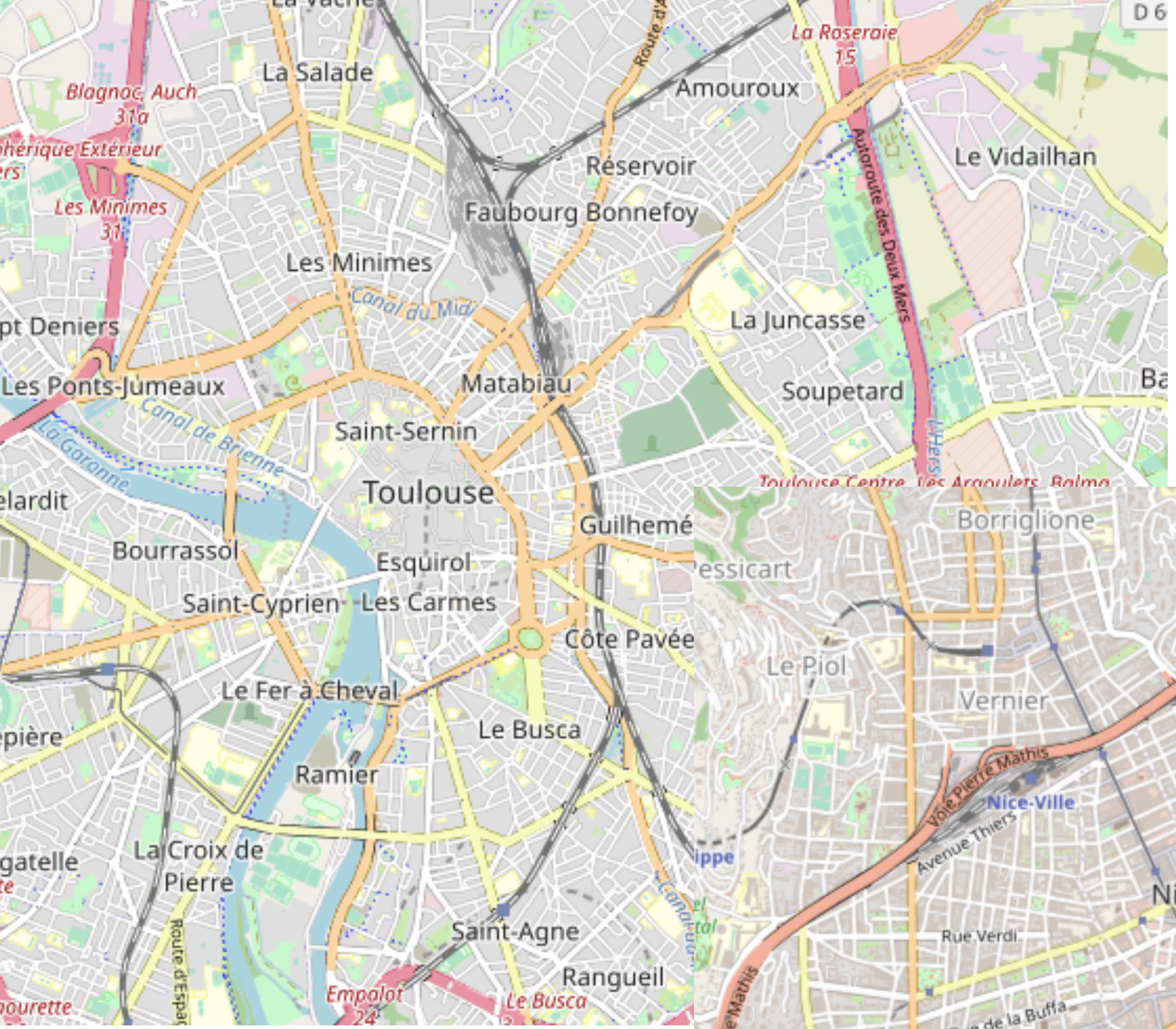
- We can recommend the city, Toulouse to start the business. In terms of hotel industry -> Nice

- Remarks: It is also possible to further explore restaurants and hotels of Toulouse and Nice in terms of ranking and visualise on the map. We also suggest to work with another data provider that has more local data in France.

CONCLUSION

- The company ‘SUNSHINE’ should start with focusing on doing research about all the restaurants in Toulouse

- Regarding the hotel industry, they should explore Nice since they have hotels as the most common venue.


La Salade
Blagnac, Auch
31a
Les Minimes
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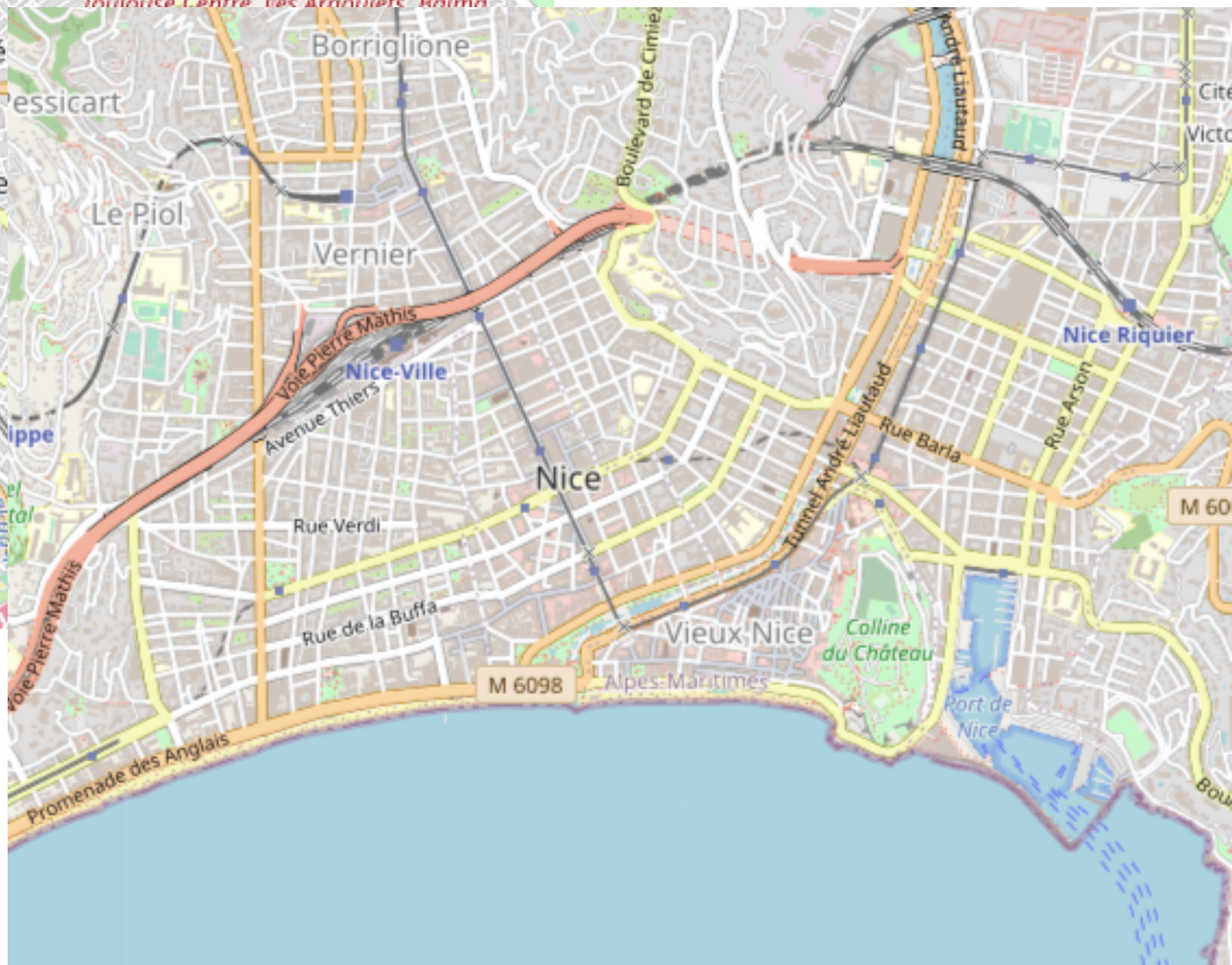
Réservoir
Faubourg Bonnefoy
Les Minimes
Canal du Midi
Les Ponts-Jumeaux
Canal de Brienne
La Garonne
Matabiau
Saint-Sernin
Toulouse
Bourrassol
Esquirol
Guilhemé
Saint-Cyprien
Les Carmes
Côte Pavée
Le Fer à Cheval
Le Busca
Ramier
La Croix de
Pierre
Saint-Agne
Rangueil
Empalot
24
Le Busca
Amouroux
La Roseraie
15
Autoroute des Deux Mers
Le Vidailhan
La Juncasse
Soupetard
L'Hers
Toulouse Centre, les Arcoulets, Balma


Borriglione
Le Piol
Vernier
Nice-Ville
Avenue Thiers
Voie Pierre Mathis
Nice
Rue Verdi
Rue de la Buffa
Vieux-Nice
Colline
du Château
Alpes-Maritimes
Port de
Nice
M 6098
Promenade des Anglais
Nice Riquier
Rue Barla
Rue Arson
Tunnel André Liautaud
Boulevard de Cimiez
M 60