Analysis of trending venues worldwide for business project

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1.Introduction

a) Description of the problem

A business owner living in the south of France in the city of Six-Fours-les-plages is looking to open a new business. He already owns 3 restaurants in the iconic French Riviera and would like to open a fourth one or maybe something different. In order to put all the chances on his side he asked if I could look around to find out what is actually trendy in the world that has not yet arrived in his city so he could be the first to offer that option which would also help him establish his business plan for a loan.

b) Description of the data

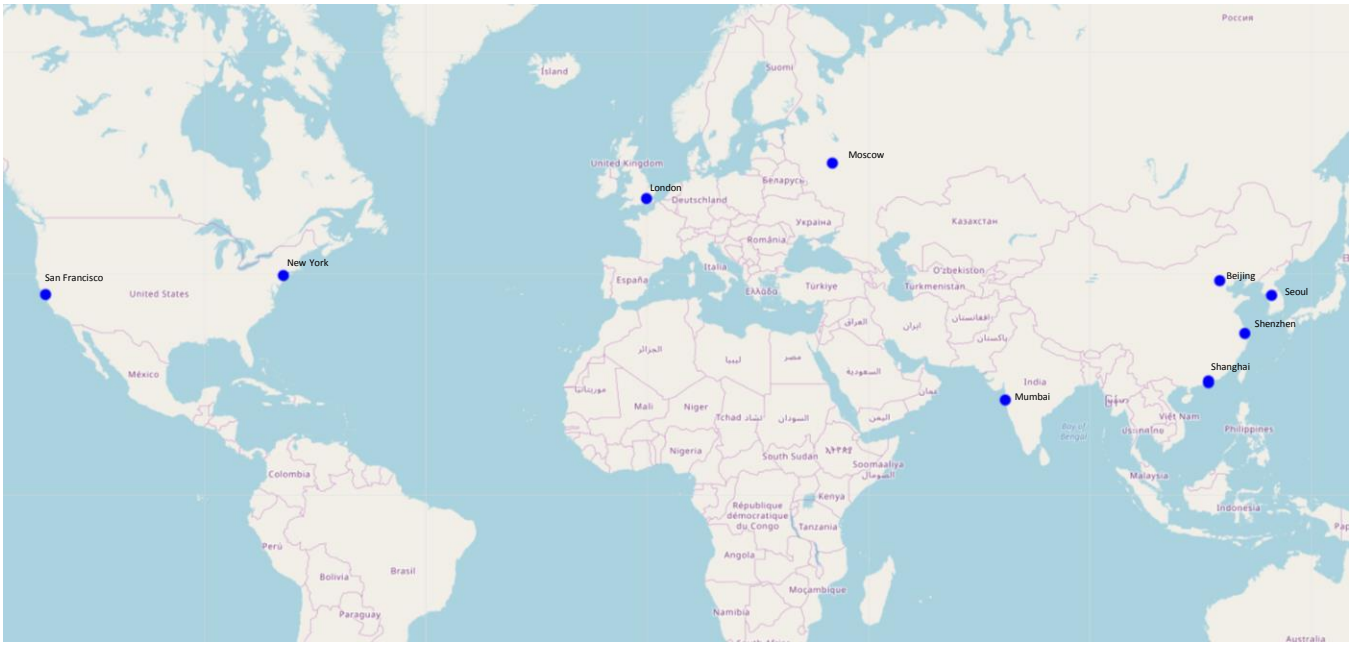
To answer his request I will use Foursquare API to gather information regarding trending businesses around the world but also in France and his city so we can compare and see if there are any patterns. We will look at the categories returned by Foursquare and focus on restaurants but we will also save other trending categories in case something interesting comes out. We can find a ranking of the richest and most visited cities in the world on Forbes and the top cities in France on Frenchtogether. I will use Pandas to save the results in dataframe and later map everything using Folium. To get the client's restaurants coordinates I will use Google maps. I will then merge and compare all this data to visualize it with the help of bar graphs. Finally I will be using a map to visualize the client's restaurants, the trending venues in his city and the venues that will be subject to future business plan depending on his final choice.

2.Exploratory data analysis

a) Trending venues worldwide

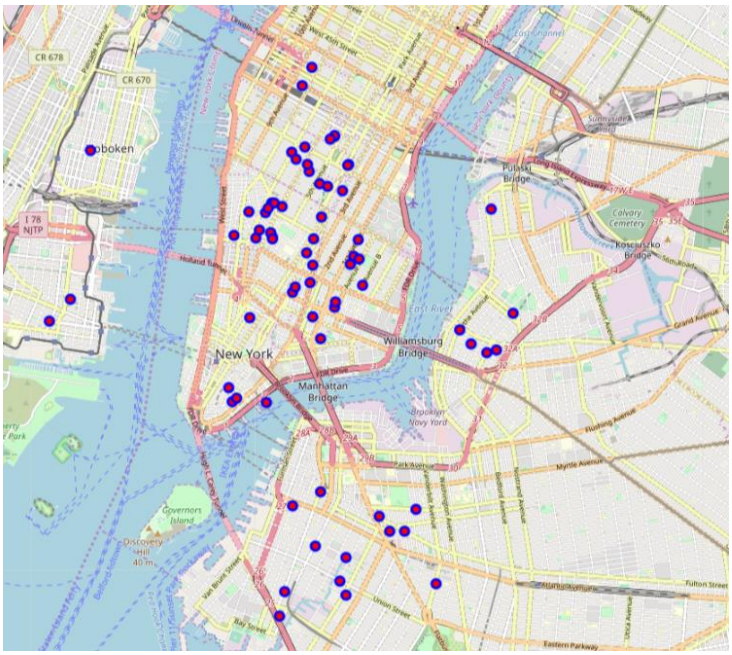
We will start by gathering the first 100 trending venues for each top city around the world. For each city we will save the results in a unique dataframe that we will clean by getting rid of unnecessary information for our study like public places, museums or stadiums. Then we will display the venues that we saved on a unique map for visual information that could help us analyze this data. For each city we will also create a unique dataframe that will show us our venues grouped by categories, summed up and organized by descending order. Finally, we will save the top 20 categories for each of those dataframes and merge them into 1 so we can have a ranking table of the top trending categories in the world.

According to Forbes the 10 top richest and touristic cities in the world are as follows:



- **New York City**

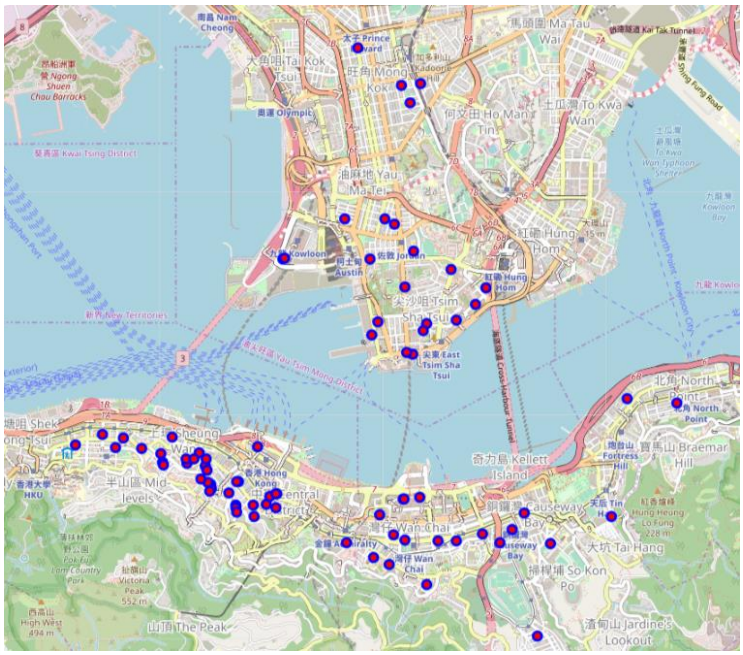
	Categories	Counts New York
0	Ice Cream Shop	6
1	Bookstore	4
2	Italian Restaurant	4
3	New American Restaurant	3
4	Cycle Studio	3
5	Yoga Studio	2
6	Mediterranean Restaurant	2
7	Art Gallery	2
8	Gym	2
9	Thai Restaurant	2
10	Pilates Studio	2
11	Bakery	2
12	Spa	2
13	Sushi Restaurant	2
14	Comedy Club	2
15	Indie Movie Theater	2
16	Salad Place	2
17	Music Venue	2
18	Japanese Restaurant	2
19	Seafood Restaurant	1



For the first city, New York, we can see that the top venue categories after cleaning our data are food related, this is exactly what we are looking for. But we also have venues like bookstores, art galleries or gyms which could be interesting for our client.

- **Hong Kong**

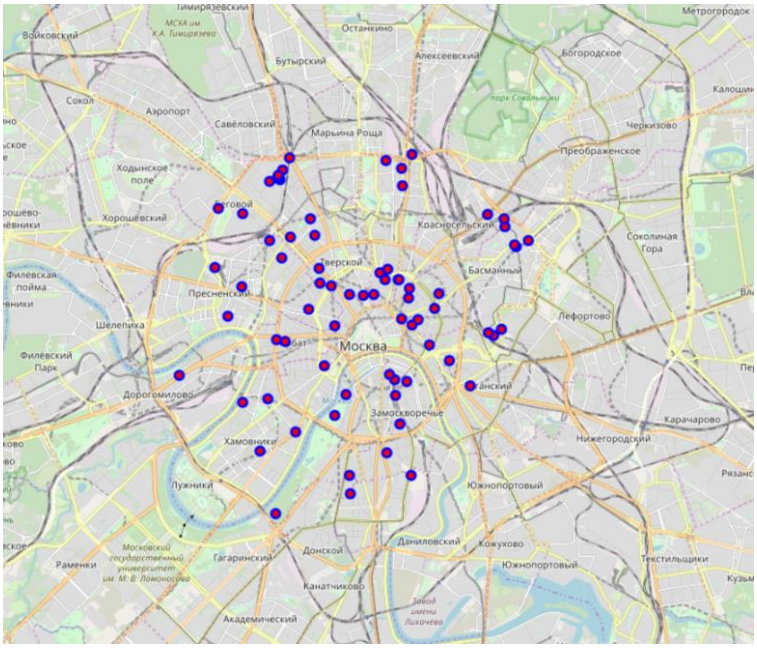
	Categories	Counts Hong Kong
0	Café	6
1	Chinese Restaurant	5
2	Coffee Shop	5
3	Cocktail Bar	4
4	Lounge	4
5	Italian Restaurant	3
6	Dim Sum Restaurant	3
7	Japanese Restaurant	3
8	Dessert Shop	2
9	French Restaurant	2
10	Speakeasy	2
11	Yoga Studio	2
12	Sushi Restaurant	2
13	Bar	2
14	Snack Place	2
15	Beer Bar	2
16	Cantonese Restaurant	2
17	Dumpling Restaurant	2
18	Tailor Shop	1
19	Gym / Fitness Center	1



For Hong Kong, we can see that the top venue categories after cleaning our data are also food related and we also have venues like gyms, we will find out next if there is a pattern.

- **Moscow**

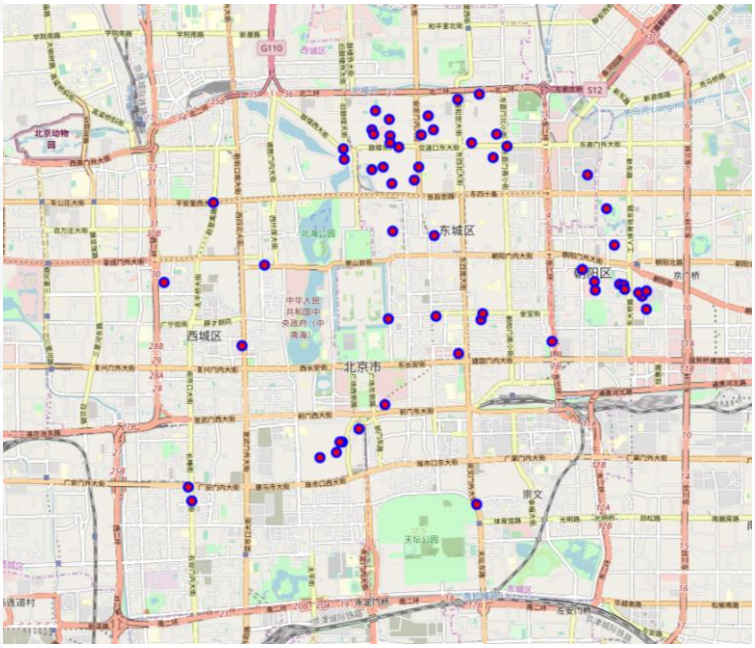
	Categories	Counts Moscow
0	Coffee Shop	7
1	Yoga Studio	6
2	Art Gallery	4
3	Pizza Place	4
4	Dance Studio	3
5	Massage Studio	3
6	Tea Room	3
7	Vietnamese Restaurant	2
8	Bookstore	2
9	Arts & Crafts Store	2
10	Photography Studio	2
11	Flower Shop	2
12	Clothing Store	2
13	Gym / Fitness Center	2
14	Music Store	2
15	Wine Shop	2
16	Health & Beauty Service	2
17	Adult Boutique	1
18	Toy / Game Store	1
19	Spa	1



In Moscow we find a more diverse result, in the top venue categories after cleaning our data we can see that art venues are trendy over there, we can see numerous art galleries but also bookstores, art and craft stores, and music stores. The wellness industry seems to be trendy as well with yoga studios at the second place right behind coffee shops. Restaurants are still in the list which is good for our study.

- **Beijing**

	Categories	Counts Beijing
0	Coffee Shop	8
1	Café	6
2	Chinese Restaurant	6
3	Vegetarian / Vegan Restaurant	3
4	Dumpling Restaurant	3
5	Peking Duck Restaurant	2
6	Beijing Restaurant	2
7	Brewery	2
8	Italian Restaurant	2
9	Cocktail Bar	2
10	BBQ Joint	2
11	Vietnamese Restaurant	2
12	Yunnan Restaurant	1
13	Music Venue	1
14	French Restaurant	1
15	Spanish Restaurant	1
16	Xinjiang Restaurant	1
17	Whisky Bar	1
18	Bakery	1
19	Butcher	1



The trend in Beijing is mostly based on the food and alcohol business with only 1 different category which is music venue. We can also conclude that people love coffee over there with a total of 14 coffee shop and café occupying the first 2 spot.

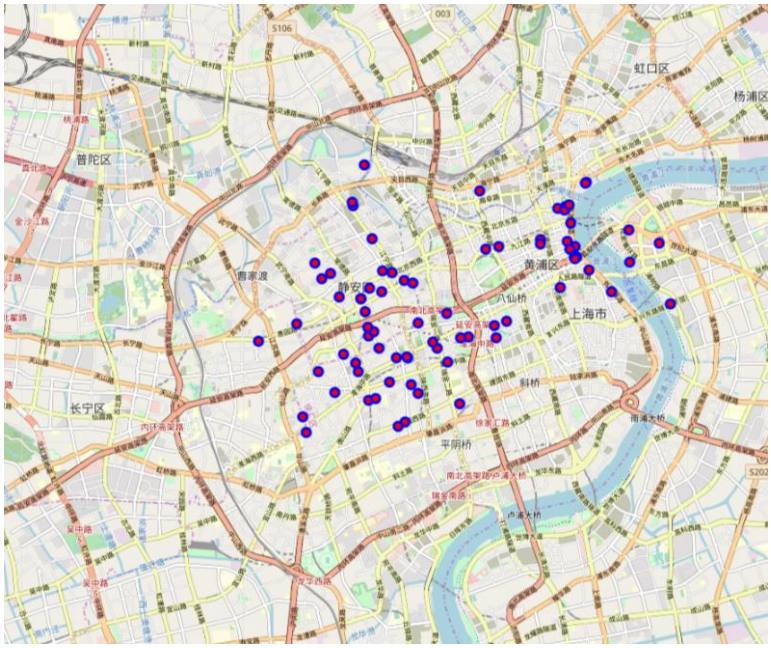
- **London**

	Categories	Counts London
0	Cocktail Bar	7
1	Art Gallery	5
2	Pizza Place	4
3	Bakery	3
4	Café	3
5	Lounge	3
6	Bookstore	3
7	Indian Restaurant	2
8	Yoga Studio	2
9	Steakhouse	2
10	Ice Cream Shop	2
11	Italian Restaurant	2
12	Bar	2
13	Paper / Office Supplies Store	1
14	Canal	1
15	Dance Studio	1
16	Gastropub	1
17	Roof Deck	1
18	Boutique	1
19	Sushi Restaurant	1

London has a larger variety of trends, a bit like Moscow, but with a large number of cocktail bars and art gallery. Restaurants still make the top with pizza places being first.

- **Shanghai**

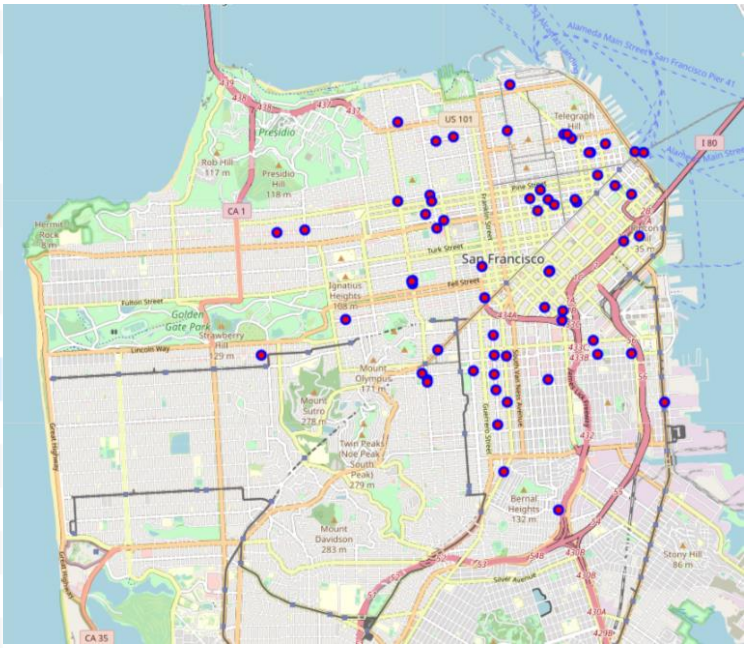
	Categories	Counts Shangai
0	Bakery	7
1	Lounge	5
2	Shanghai Restaurant	4
3	Dumpling Restaurant	4
4	French Restaurant	3
5	Coffee Shop	3
6	Chinese Restaurant	3
7	Cocktail Bar	2
8	Burger Joint	2
9	Yoga Studio	2
10	Café	2
11	Nail Salon	2
12	Bar	2
13	Art Gallery	2
14	Pizza Place	1
15	Video Store	1
16	Tapas Restaurant	1
17	Roof Deck	1
18	Gourmet Shop	1
19	Gym	1



In Shanghai we find the same categories as in the previous cities, a pattern can be revealed, restaurants, café, wellness and art venues being found also here. This is looking good for our project.

- **San Francisco**

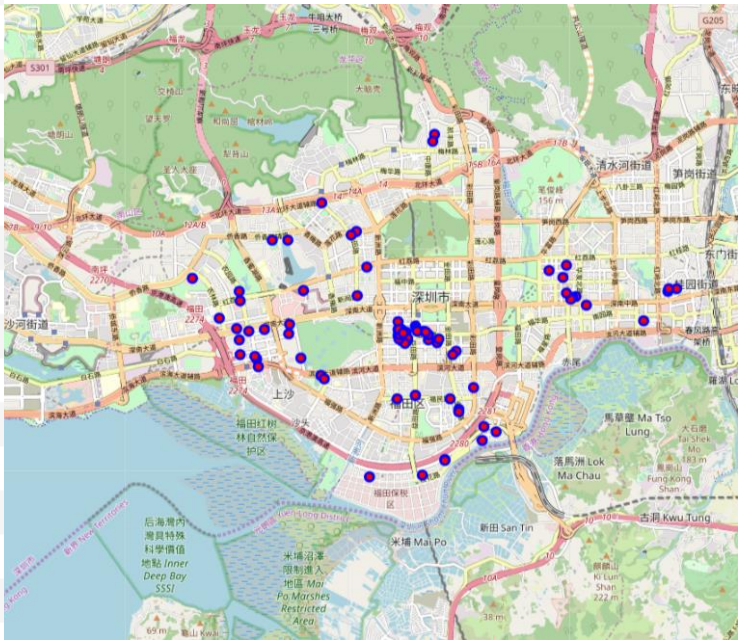
	Categories	Counts San Francisco
0	Bookstore	4
1	Yoga Studio	4
2	Coffee Shop	4
3	Brewery	4
4	Wine Bar	3
5	Gym	3
6	Bakery	3
7	Gym / Fitness Center	2
8	Bar	2
9	Accessories Store	2
10	Café	2
11	Boutique	2
12	Greek Restaurant	2
13	Sushi Restaurant	1
14	Argentinian Restaurant	1
15	Deli / Bodega	1
16	Seafood Restaurant	1
17	Performing Arts Venue	1
18	American Restaurant	1
19	Ice Cream Shop	1



Again the same pattern in San Francisco with yoga studios, coffee shops and bookstores at the top of the trending venues this time.

- **Shenzhen**

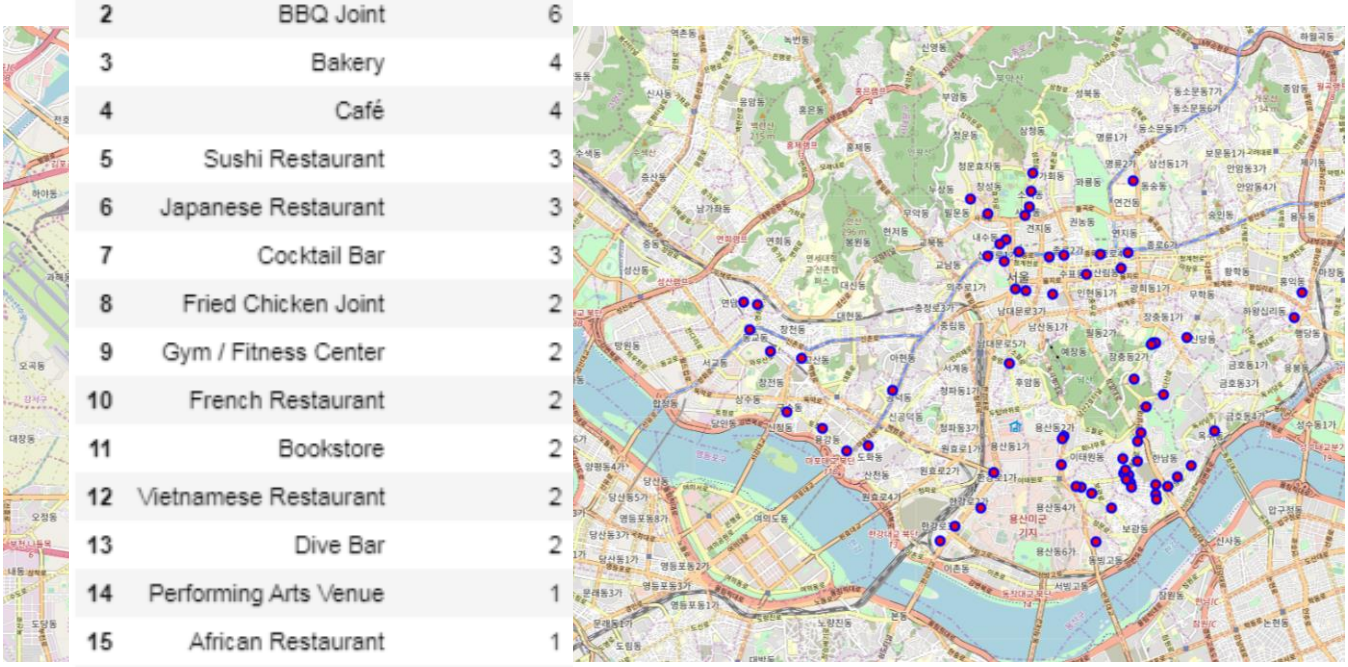
	Categories	Counts Shenzhen
0	Coffee Shop	13
1	Fast Food Restaurant	8
2	Café	7
3	Chinese Restaurant	5
4	Electronics Store	4
5	Spa	4
6	Japanese Restaurant	3
7	Hotpot Restaurant	3
8	Lounge	3
9	Turkish Restaurant	2
10	Dim Sum Restaurant	2
11	Karaoke Bar	2
12	Hong Kong Restaurant	2
13	Thai Restaurant	2
14	Speakeasy	1
15	Steakhouse	1
16	BBQ Joint	1
17	Japanese Curry Restaurant	1
18	Irish Pub	1
19	Szechuan Restaurant	1



Here we have a really similar trend as found in Beijing with 20 coffee shops and cafes in the top 3, fast foods being second with a total of 8 venues followed by a large variety of restaurants.

- **Seoul**

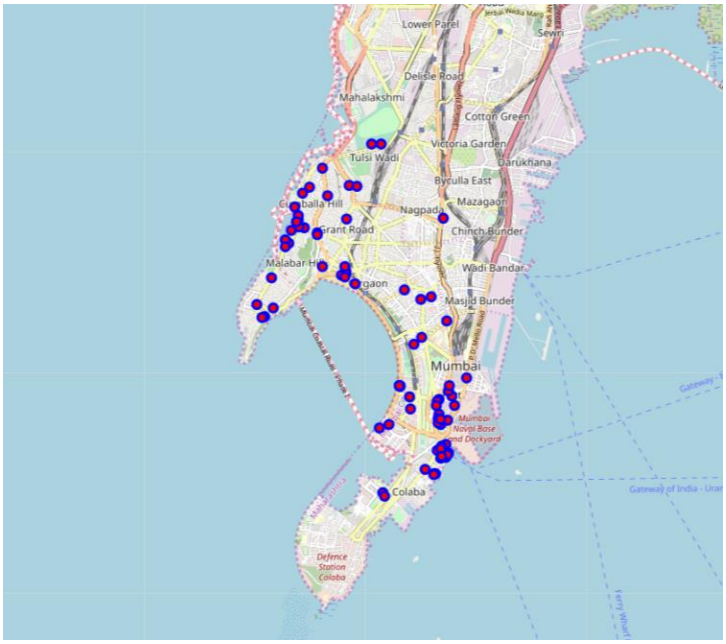
	Categories	Counts Seoul
0	Korean Restaurant	9
1	Coffee Shop	6
2	BBQ Joint	6
3	Bakery	4
4	Café	4
5	Sushi Restaurant	3
6	Japanese Restaurant	3
7	Cocktail Bar	3
8	Fried Chicken Joint	2
9	Gym / Fitness Center	2
10	French Restaurant	2
11	Bookstore	2
12	Vietnamese Restaurant	2
13	Dive Bar	2
14	Performing Arts Venue	1
15	African Restaurant	1
16	Buffet	1
17	Used Bookstore	1
18	Bagel Shop	1
19	Italian Restaurant	1



In Seoul we find a larger choice of multicultural cuisines with French, African and Italian restaurants but coffee is still omnipresent.

- **Mumbai**

	Categories	Counts Mumbai
0	Indian Restaurant	14
1	Fast Food Restaurant	6
2	Dessert Shop	5
3	Café	5
4	Ice Cream Shop	4
5	Bakery	3
6	Snack Place	2
7	Coffee Shop	2
8	Deli / Bodega	2
9	Lounge	2
10	Cocktail Bar	2
11	Juice Bar	2
12	Seafood Restaurant	2
13	Bar	2
14	Breakfast Spot	2
15	Asian Restaurant	2
16	Thai Restaurant	1
17	Mediterranean Restaurant	1
18	Mexican Restaurant	1
19	Restaurant	1

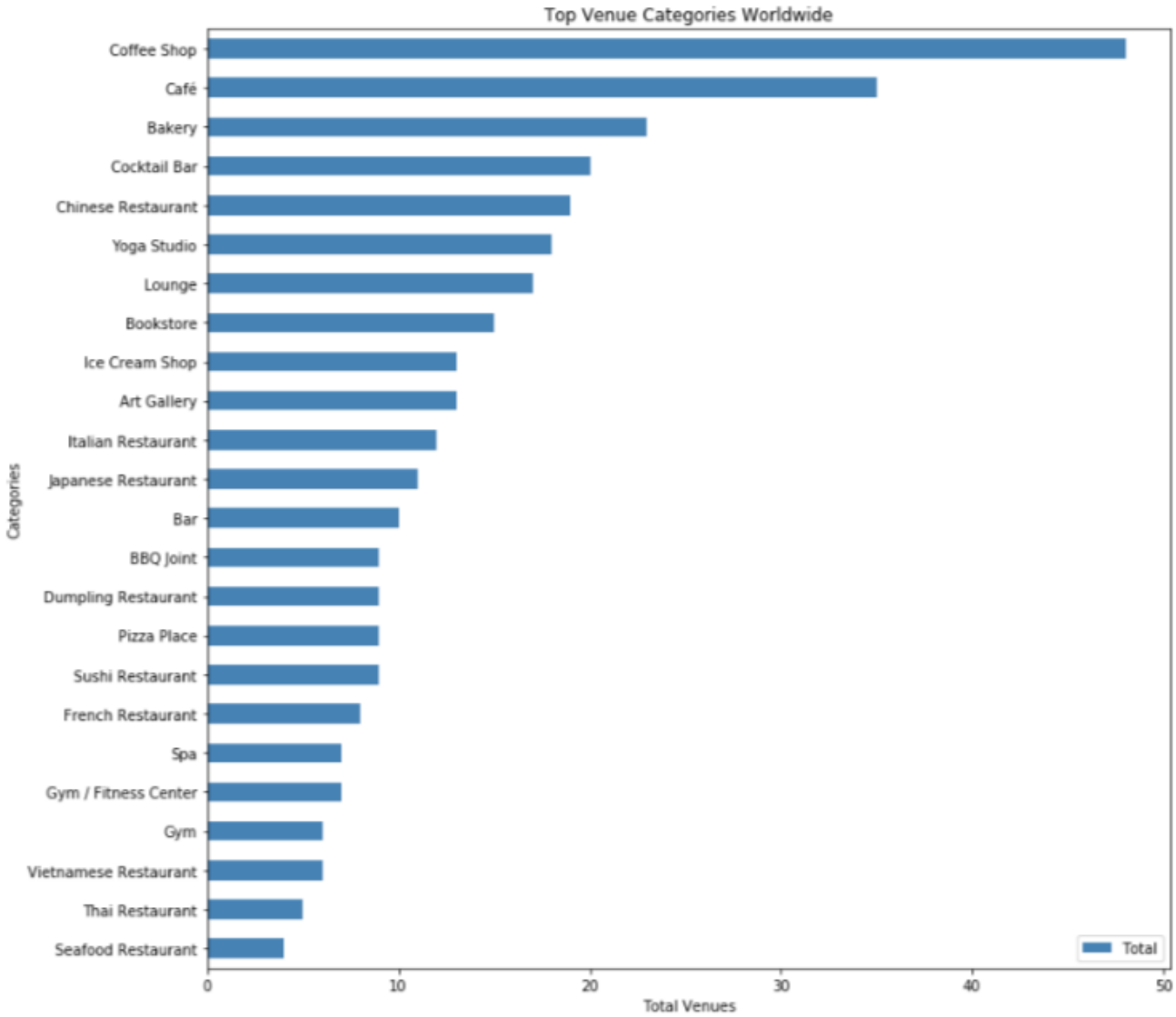


We finish our world tour with the city of Mumbai which also has a large variety of cuisines, many bars and as always coffee places.

In order to get a better analysis of our data we will merge our previously found results into 1 large dataframe that we will organize in descendant order as well so we will have a view of the top venue categories in the world.

Categories	Counts New York	Counts Hong Kong	Counts Moscow	Counts Beijing	Counts London	Counts Shangai	Counts San Francisco	Counts Shenzhen	Counts Seoul	Counts Mumbai	Total
Coffee Shop	NaN	5.0	7.0	8.0	NaN	3.0	4.0	13.0	6.0	2.0	48.0
Café	NaN	6.0	NaN	6.0	3.0	2.0	2.0	7.0	4.0	5.0	35.0
Bakery	2.0	NaN	NaN	1.0	3.0	7.0	3.0	NaN	4.0	3.0	23.0
Cocktail Bar	NaN	4.0	NaN	2.0	7.0	2.0	NaN	NaN	3.0	2.0	20.0
Chinese Restaurant	NaN	5.0	NaN	6.0	NaN	3.0	NaN	5.0	NaN	NaN	19.0
Yoga Studio	2.0	2.0	6.0	NaN	2.0	2.0	4.0	NaN	NaN	NaN	18.0
Lounge	NaN	4.0	NaN	NaN	3.0	5.0	NaN	3.0	NaN	2.0	17.0
Bookstore	4.0	NaN	2.0	NaN	3.0	NaN	4.0	NaN	2.0	NaN	15.0
Ice Cream Shop	6.0	NaN	NaN	NaN	2.0	NaN	1.0	NaN	NaN	4.0	13.0
Art Gallery	2.0	NaN	4.0	NaN	5.0	2.0	NaN	NaN	NaN	NaN	13.0
Italian Restaurant	4.0	3.0	NaN	2.0	2.0	NaN	NaN	NaN	1.0	NaN	12.0
Japanese Restaurant	2.0	3.0	NaN	NaN	NaN	NaN	NaN	3.0	3.0	NaN	11.0
Bar	NaN	2.0	NaN	NaN	2.0	2.0	2.0	NaN	NaN	2.0	10.0
BBQ Joint	NaN	NaN	NaN	2.0	NaN	NaN	NaN	1.0	6.0	NaN	9.0
Dumpling Restaurant	NaN	2.0	NaN	3.0	NaN	4.0	NaN	NaN	NaN	NaN	9.0
Pizza Place	NaN	NaN	4.0	NaN	4.0	1.0	NaN	NaN	NaN	NaN	9.0
Sushi Restaurant	2.0	2.0	NaN	NaN	1.0	NaN	1.0	NaN	3.0	NaN	9.0
French Restaurant	NaN	2.0	NaN	1.0	NaN	3.0	NaN	NaN	2.0	NaN	8.0
Spa	2.0	NaN	1.0	NaN	NaN	NaN	NaN	4.0	NaN	NaN	7.0
Gym / Fitness Center	NaN	1.0	2.0	NaN	NaN	NaN	2.0	NaN	2.0	NaN	7.0
Gym	2.0	NaN	NaN	NaN	NaN	1.0	3.0	NaN	NaN	NaN	6.0
Vietnamese Restaurant	NaN	NaN	2.0	2.0	NaN	NaN	NaN	NaN	2.0	NaN	6.0
Thai Restaurant	2.0	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	1.0	5.0
Seafood Restaurant	1.0	NaN	NaN	NaN	NaN	NaN	1.0	NaN	NaN	2.0	4.0

Even though we cleaned our data to keep only 3 columns per city we end up with a total of 12 columns and 24 categories with some of those categories present only in 1 or 2 cities. To get a better sense of worldwide trend we will keep only categories that are found in at least 3 cities so we put aside any cultural result. Once our data cleaned again we will display the result on a bar graph for easy interpretation.



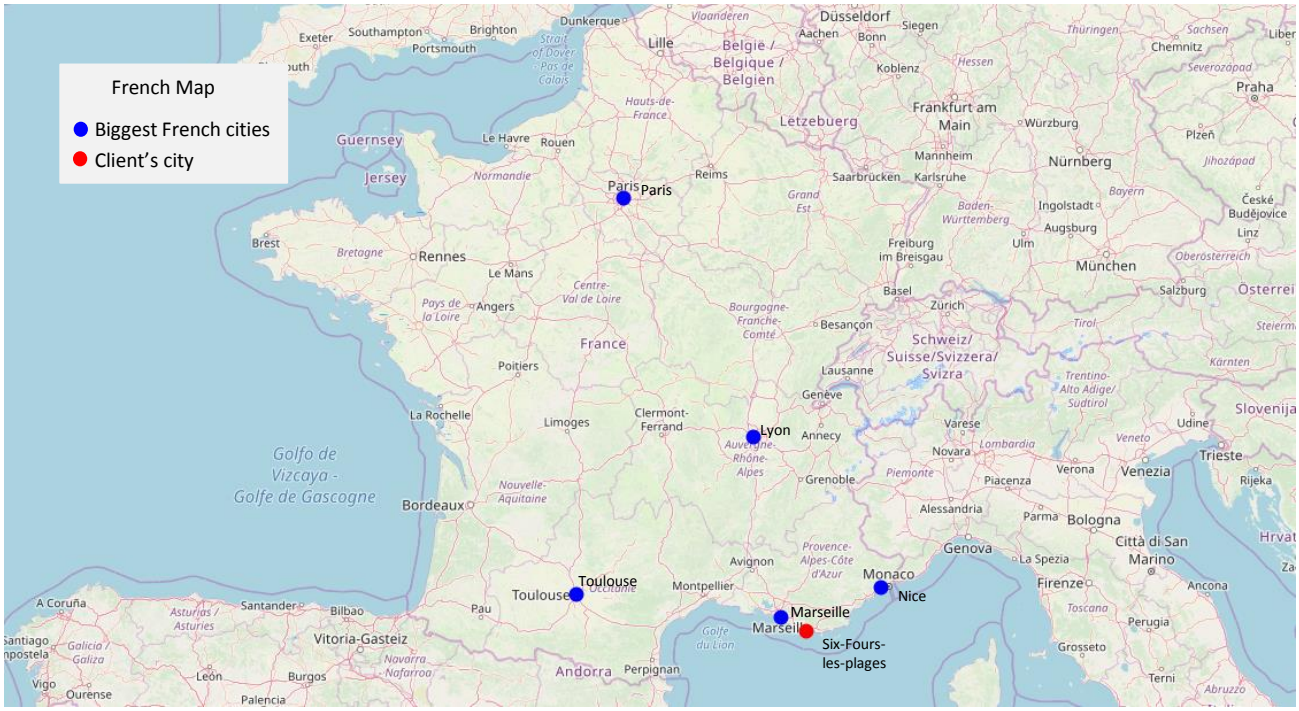
After cleaning our data we end up with a total of 19 categories found in at least 3 cities around the world. We can now make our conclusion regarding the top venue categories found in the richest and most touristic places in the world.

With coffee places occupying the first 2 spot at an astonishing total of 83 venues we can say that coffee is extremely trendy everywhere in the world, we will see later if this trend can be also found in the top French cities. In the third place we find bakeries followed by cocktail bars, Chinese restaurants and yoga studios. Most of the venues are food related which is what we are looking for, we can now look at the top French cities for later comparison.

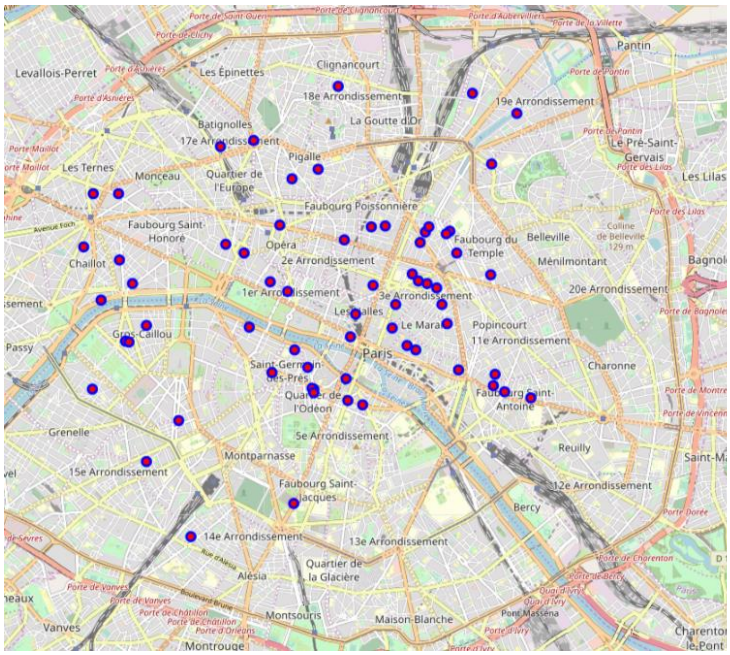
b) <u>Trending venues in France</u>

Because markets can differ depending on the country, mainly based on culture, we will take a look at the 5 biggest cities in France according to Frenchtogether website. We will repeat the same process we previously developed for the top cities in the world to finish with a graph showing clearly the trending venue categories in France.

On the following map we can see those 5 cities as well as the client's city.



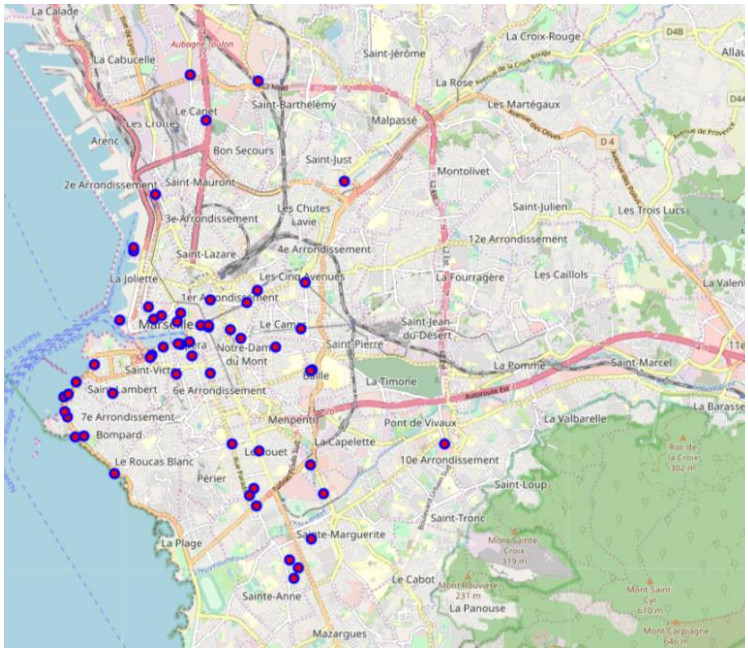
- **Paris**



	Categories	Counts Paris
0	French Restaurant	10
1	Wine Bar	5
2	Italian Restaurant	4
3	Bookstore	3
4	Bakery	2
5	Breakfast Spot	2
6	Indie Movie Theater	2
7	Art Gallery	2
8	Seafood Restaurant	2
9	Cocktail Bar	2
10	Women's Store	1
11	Food & Drink Shop	1
12	Korean Restaurant	1
13	Performing Arts Venue	1
14	Toy / Game Store	1
15	Argentinian Restaurant	1
16	Vegetarian / Vegan Restaurant	1
17	Music Venue	1
18	Pastry Shop	1
19	Bistro	1

We start obviously with Paris, we can see with no surprise that the first trending category is French restaurant with a total of 10 venues. After cleaning our data we have a majority of food related venues, looks like a good start. But surprisingly we don’t see any coffee shop or café in the list, let see what we will find next.

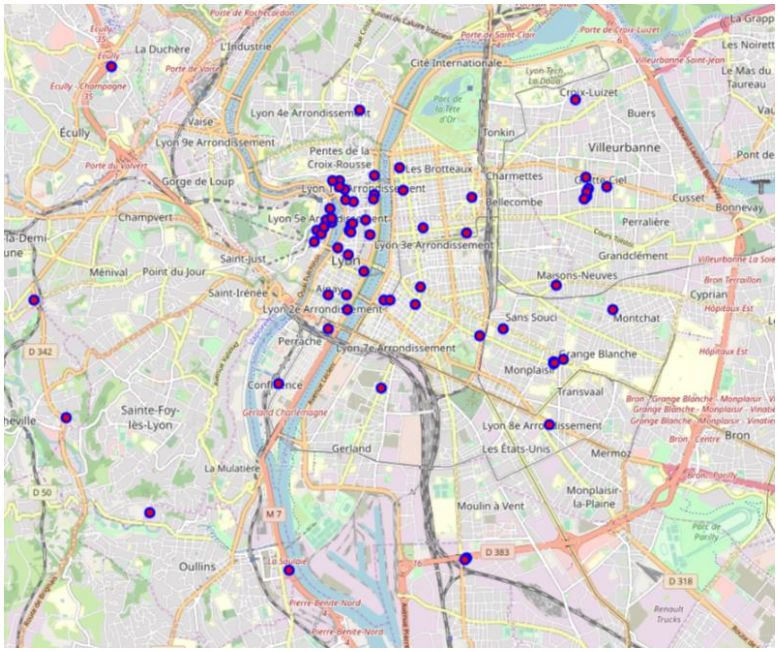
- **Marseille**



	Categories	Counts Marseille
0	French Restaurant	7
1	Seafood Restaurant	5
2	Bar	4
3	Coffee Shop	3
4	Pub	3
5	Bakery	2
6	Sandwich Place	2
7	Candy Store	2
8	Pizza Place	2
9	Tapas Restaurant	2
10	Nightclub	2
11	Tea Room	2
12	Restaurant	2
13	Provençal Restaurant	2
14	Italian Restaurant	2
15	Cupcake Shop	1
16	Deli / Bodega	1
17	Chinese Restaurant	1
18	Gym / Fitness Center	1
19	Big Box Store	1

In the second biggest city of France, Marseille, which is about an hour drive from our client's city, we notice a similar trend as in Paris. We see again that the first trending category is French restaurant with a total of 7 venues. Coffee shops are present this time but don't make the top 3, while seafood restaurants are in second position which makes sense since the city is by the Mediterranean sea.

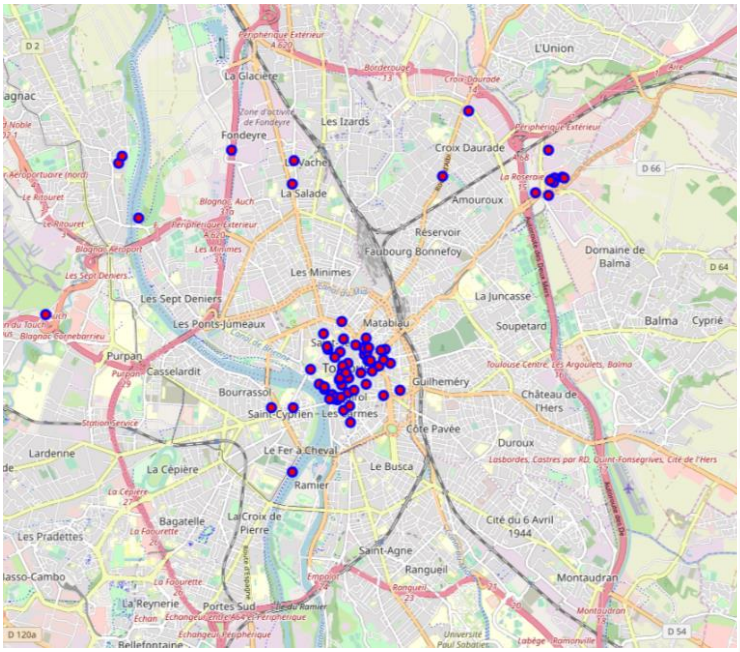
- **Lyon**



	Categories	Counts Lyon
0	French Restaurant	12
1	Bar	8
2	Cocktail Bar	4
3	Lyonese Bouchon	4
4	Fast Food Restaurant	3
5	Bakery	3
6	Bistro	2
7	Ice Cream Shop	2
8	Dessert Shop	2
9	Falafel Restaurant	2
10	Sandwich Place	2
11	Pet Store	2
12	Electronics Store	2
13	Pub	2
14	Indian Restaurant	2
15	Restaurant	2
16	Beer Bar	2
17	Deli / Bodega	1
18	Italian Restaurant	1
19	Diner	1

No coffee shop again here but we still find French restaurants occupying the first position with a total of 12 venues and the introduction of the famous Lyonese bouchons, a local specialty. We also notice that bars are trendy as well with a total of 18 venues.

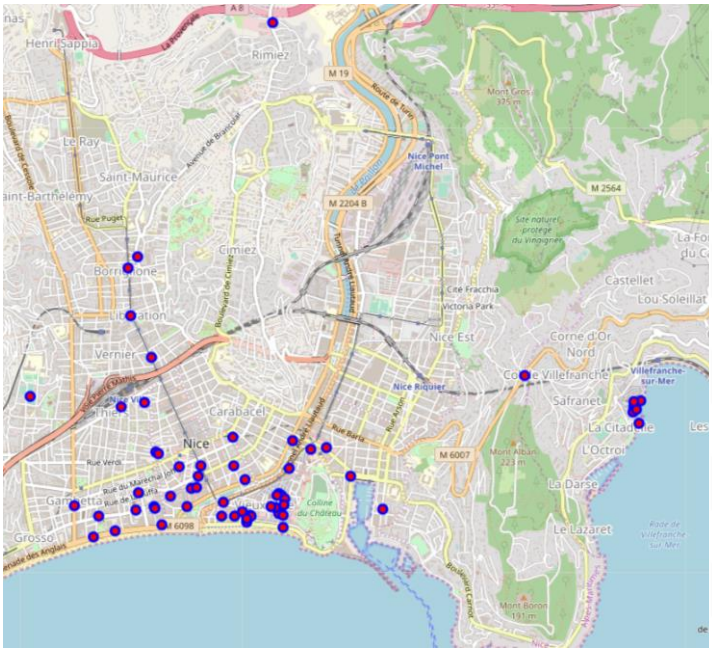
- **Toulouse**



	Categories	Counts Toulouse
0	French Restaurant	19
1	Bar	6
2	Pub	4
3	Wine Bar	3
4	Café	3
5	Clothing Store	3
6	Pizza Place	2
7	Japanese Restaurant	2
8	Sandwich Place	2
9	Tea Room	2
10	Burger Joint	2
11	Snack Place	2
12	Restaurant	2
13	Nightclub	1
14	Electronics Store	1
15	Hobby Shop	1
16	Sushi Restaurant	1
17	Racetrack	1
18	Ice Cream Shop	1
19	Beer Bar	1

In Toulouse the trend is more eclectic, French restaurants keep the first place with a total of 19 venues followed by bars and the come back of café at the fifth place. Various stores and nightclubs make the top trends here.

- **Nice**



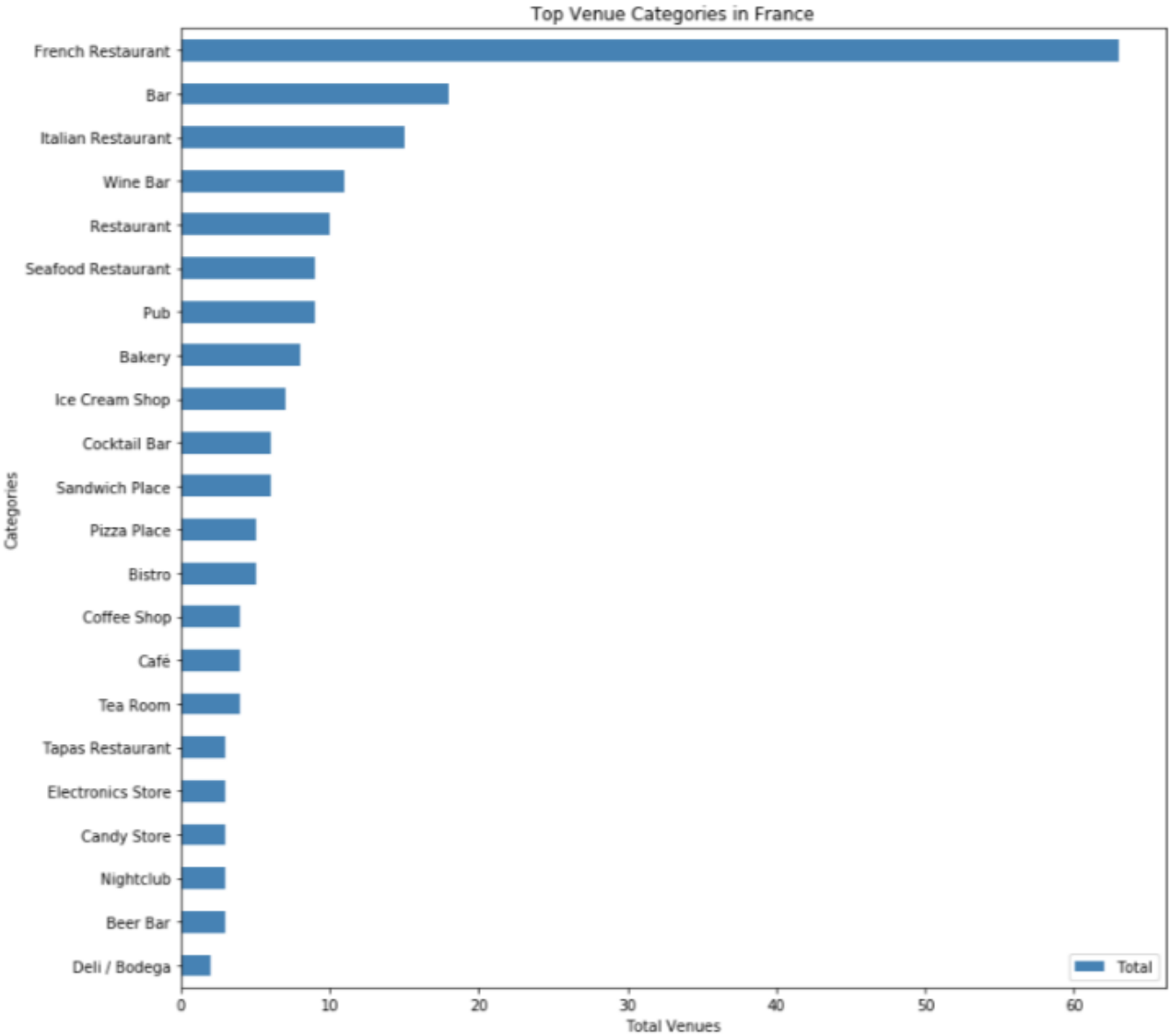
	Categories	Counts Nice
0	French Restaurant	15
1	Italian Restaurant	8
2	Ice Cream Shop	4
3	Restaurant	4
4	Mediterranean Restaurant	4
5	Wine Bar	3
6	Seafood Restaurant	2
7	Bistro	2
8	Middle Eastern Restaurant	2
9	Tapas Restaurant	1
10	Pizza Place	1
11	Bakery	1
12	Lounge	1
13	Furniture / Home Store	1
14	Bagel Shop	1
15	Café	1
16	Candy Store	1
17	Gay Bar	1
18	Coffee Shop	1
19	Jazz Club	1

To finish, we see that in Nice the top trend is pretty similar to Marseille, the 2 cities are by the Mediterranean sea as well as the city of Six-Fours-les-plages which we will see next. It is though not surprising to find French and seafood restaurants making the top of the list.

We will merge all our results in a single dataframe as we did for the top cities in the world by organizing it in descendant order too, we will get then a table of the top trending venues in the 5 biggest French cities.

Categories	Counts Paris	Counts Marseille	Counts Lyon	Counts Toulouse	Counts Nice	Total
French Restaurant	10.0	7.0	12.0	19.0	15.0	63.0
Bar	NaN	4.0	8.0	6.0	NaN	18.0
Italian Restaurant	4.0	2.0	1.0	NaN	8.0	15.0
Wine Bar	5.0	NaN	NaN	3.0	3.0	11.0
Restaurant	NaN	2.0	2.0	2.0	4.0	10.0
Seafood Restaurant	2.0	5.0	NaN	NaN	2.0	9.0
Pub	NaN	3.0	2.0	4.0	NaN	9.0
Bakery	2.0	2.0	3.0	NaN	1.0	8.0
Ice Cream Shop	NaN	NaN	2.0	1.0	4.0	7.0
Cocktail Bar	2.0	NaN	4.0	NaN	NaN	6.0
Sandwich Place	NaN	2.0	2.0	2.0	NaN	6.0
Pizza Place	NaN	2.0	NaN	2.0	1.0	5.0
Bistro	1.0	NaN	2.0	NaN	2.0	5.0
Coffee Shop	NaN	3.0	NaN	NaN	1.0	4.0
Café	NaN	NaN	NaN	3.0	1.0	4.0
Tea Room	NaN	2.0	NaN	2.0	NaN	4.0
Electronics Store	NaN	NaN	2.0	1.0	NaN	3.0
Candy Store	NaN	2.0	NaN	NaN	1.0	3.0
Nightclub	NaN	2.0	NaN	1.0	NaN	3.0
Beer Bar	NaN	NaN	2.0	1.0	NaN	3.0
Tapas Restaurant	NaN	2.0	NaN	NaN	1.0	3.0
Deli / Bodega	NaN	1.0	1.0	NaN	NaN	2.0

With only half the cities compared to the first merged dataframes we still have a lot of information showing, but with a total of 22 categories this time. We notice that all categories have been found in at least 2 cities so we will keep the dataframe as it is and display everything in a graph for better reading.

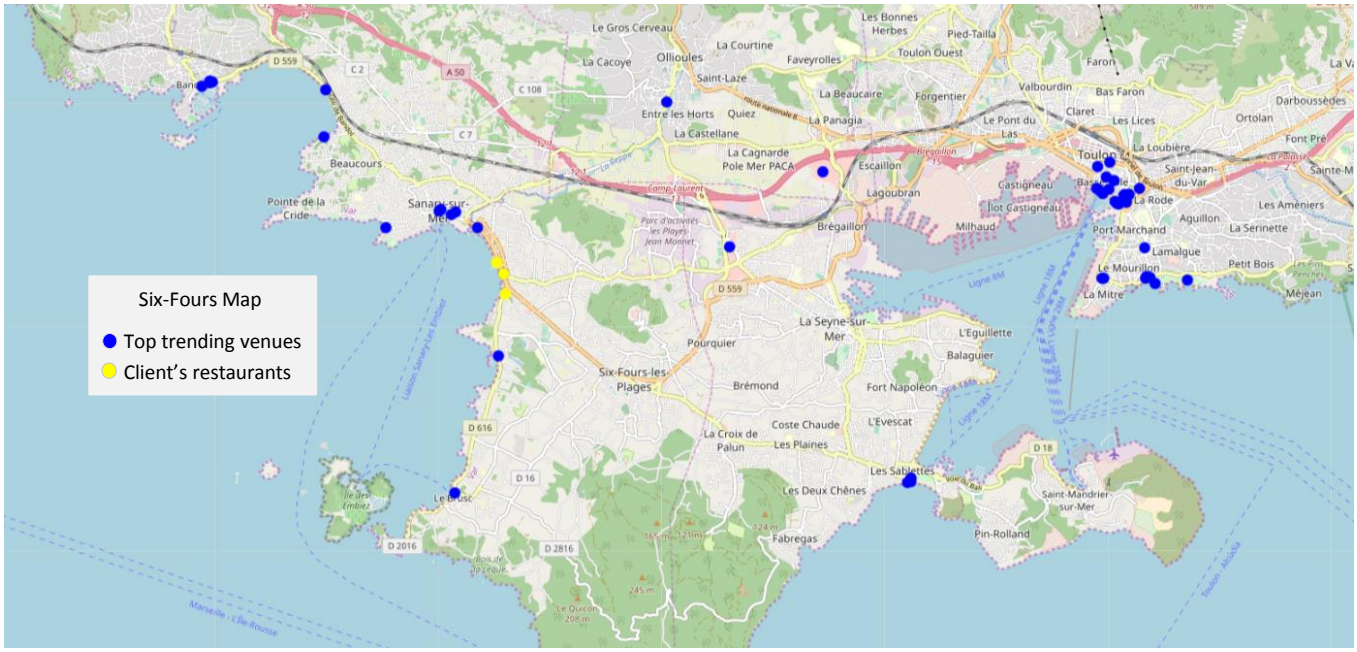


With a total of 63 venues and making a huge step ahead everything else we can see that French restaurants occupy the first position which again is not surprising after all France is known for its cuisine so we are expecting to find the same trend with the next study of the client's city. Diverse restaurants and bars complete the list with electronic and candy stores at the bottom, followed by nightclubs. One unexpected result is about coffee shops, French people are known to drink a lot of coffee but for cultural reason the venues are not that trendy over there.
In the next final step we will look at the city of Six-Fours-les-plages before making our analysis.

c) <u>Trending venues in Six-Fours-les-plages</u>

We will now look at the trending venues in Six-Fours-les-plages by running one more time through the same process we've applied previously. We will also map the results along with the client's owned restaurants and see if his establishments are part of the trend while we're at it. To map his restaurants we looked at Google maps to retrieve the coordinates, they are as follows:

- La Vague (steakhouse) = 43.110279, 5.812283
- Pouss Pouss (Thai restaurant) = 43.105783, 5.81394
- Moom (Japanese restaurant) = 43.108679, 5.813582



	Categories	Counts
0	Bar	6
1	French Restaurant	5
2	Cocktail Bar	4
3	Ice Cream Shop	4
4	Restaurant	4
5	Café	2
6	Mediterranean Restaurant	2
7	Pizza Place	2
8	Sandwich Place	2
9	Coffee Shop	1
10	Sushi Restaurant	1
11	Big Box Store	1
12	Lounge	1
13	Nightclub	1
14	Seafood Restaurant	1
15	Bakery	1
16	Clothing Store	1
17	Electronics Store	1
18	Creperie	1
19	Fast Food Restaurant	1
20	Provençal Restaurant	1
21	Cosmetics Shop	1
22	Rugby Pitch	1
23	Mobile Phone Shop	1
24	Salad Place	1
25	Comfort Food Restaurant	1
26	Sports Bar	1

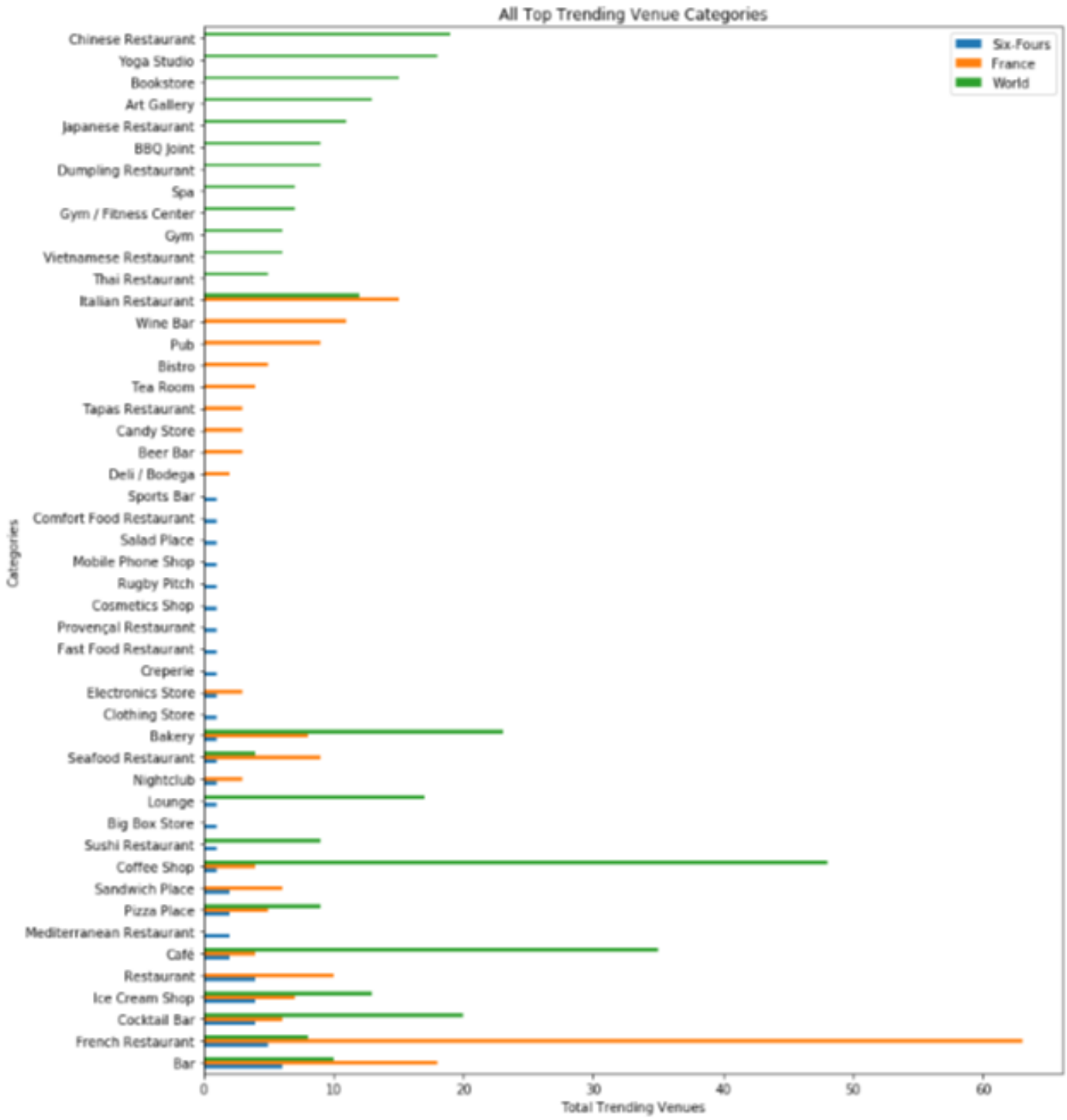
We found a total of 77 trending venues before cleaning our data with a limit set to 100 which could mean the city is small compared to all the cities we previously studied and does not have much venues. After cleaning the data we end up with 27 distinctive trending categories, much of them being food related which is exactly what we were expecting. At the top we can see that French restaurants are still there, right between bars and cocktail bars respectively at the 1st and 3rd place.

d) <u>Comparison of all trending categories</u>

Now that we have gathered all trending categories around the world, in France and in Six-fours-les-plages we are able to compare the results by merging all the dataframes we've saved so far.

Once we have a final dataframe we will show on a graph what can be found everywhere and what categories are not found in the city of Six-Fours-les-plages. We will then search for the missing categories to see if venues exist at all in the city.

Categories	Counts New York	Counts Hong Kong	Counts Moscow	Counts Beijing	Counts London	Counts Shangai	Counts San Francisco	Counts Shenzhen	Counts Seoul	Counts Mumbai	Counts Paris	Counts Marseille	Counts Lyon	Counts Toulouse	Counts Nice	Total
French Restaurant	NaN	2.0	NaN	1.0	NaN	3.0	NaN	NaN	2.0	NaN	10.0	7.0	12.0	19.0	15.0	71.0
Coffee Shop	NaN	5.0	7.0	8.0	NaN	3.0	4.0	13.0	6.0	2.0	NaN	3.0	NaN	NaN	1.0	52.0
Cafe	NaN	6.0	NaN	6.0	3.0	2.0	2.0	7.0	4.0	5.0	NaN	NaN	NaN	3.0	1.0	39.0
Bakery	2.0	NaN	NaN	1.0	3.0	7.0	3.0	NaN	4.0	3.0	2.0	2.0	3.0	NaN	1.0	31.0
Bar	NaN	2.0	NaN	NaN	2.0	2.0	2.0	NaN	NaN	2.0	NaN	4.0	8.0	6.0	NaN	28.0
Italian Restaurant	4.0	3.0	NaN	2.0	2.0	NaN	NaN	NaN	1.0	NaN	4.0	2.0	1.0	NaN	8.0	27.0
Cocktail Bar	NaN	4.0	NaN	2.0	7.0	2.0	NaN	NaN	3.0	2.0	2.0	NaN	4.0	NaN	NaN	26.0
Ice Cream Shop	6.0	NaN	NaN	NaN	2.0	NaN	1.0	NaN	NaN	4.0	NaN	NaN	2.0	1.0	4.0	20.0
Chinese Restaurant	NaN	5.0	NaN	6.0	NaN	3.0	NaN	5.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	19.0
Yoga Studio	2.0	2.0	6.0	NaN	2.0	2.0	4.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	18.0
Lounge	NaN	4.0	NaN	NaN	3.0	5.0	NaN	3.0	NaN	2.0	NaN	NaN	NaN	NaN	NaN	17.0
Bookstore	4.0	NaN	2.0	NaN	3.0	NaN	4.0	NaN	2.0	NaN	NaN	NaN	NaN	NaN	NaN	15.0
Pizza Place	NaN	NaN	4.0	NaN	4.0	1.0	NaN	NaN	NaN	NaN	NaN	2.0	NaN	2.0	1.0	14.0
Art Gallery	2.0	NaN	4.0	NaN	5.0	2.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	13.0
Seafood Restaurant	1.0	NaN	NaN	NaN	NaN	NaN	1.0	NaN	NaN	2.0	2.0	5.0	NaN	NaN	2.0	13.0
Japanese Restaurant	2.0	3.0	NaN	NaN	NaN	NaN	NaN	3.0	3.0	NaN	NaN	NaN	NaN	NaN	NaN	11.0
Wine Bar	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	5.0	NaN	NaN	3.0	3.0	11.0
Restaurant	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	2.0	2.0	4.0	10.0
Sushi Restaurant	2.0	2.0	NaN	NaN	1.0	NaN	1.0	NaN	3.0	NaN	NaN	NaN	NaN	NaN	NaN	9.0
Dumpling Restaurant	NaN	2.0	NaN	3.0	NaN	4.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	9.0
BBQ Joint	NaN	NaN	NaN	2.0	NaN	NaN	NaN	1.0	6.0	NaN	NaN	NaN	NaN	NaN	NaN	9.0
Pub	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	3.0	2.0	4.0	NaN	9.0
Spa	2.0	NaN	1.0	NaN	NaN	NaN	NaN	4.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	7.0
Gym / Fitness Center	NaN	1.0	2.0	NaN	NaN	NaN	2.0	NaN	2.0	NaN	NaN	NaN	NaN	NaN	NaN	7.0
Vietnamese Restaurant	NaN	NaN	2.0	2.0	NaN	NaN	NaN	NaN	2.0	NaN	NaN	NaN	NaN	NaN	NaN	6.0
Gym	2.0	NaN	NaN	NaN	NaN	1.0	3.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	6.0
Sandwich Place	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	2.0	2.0	NaN	6.0
Thai Restaurant	2.0	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	1.0	NaN	NaN	NaN	NaN	NaN	5.0
Bistro	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1.0	NaN	2.0	NaN	2.0	5.0
Tea Room	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	2.0	NaN	4.0
Electronics Store	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	1.0	NaN	3.0
Candy Store	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	NaN	1.0	3.0
Nightclub	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	1.0	NaN	3.0
Beer Bar	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	1.0	NaN	3.0
Tapas Restaurant	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2.0	NaN	NaN	1.0	3.0
Deli / Bodega	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	1.0	1.0	NaN	NaN	2.0



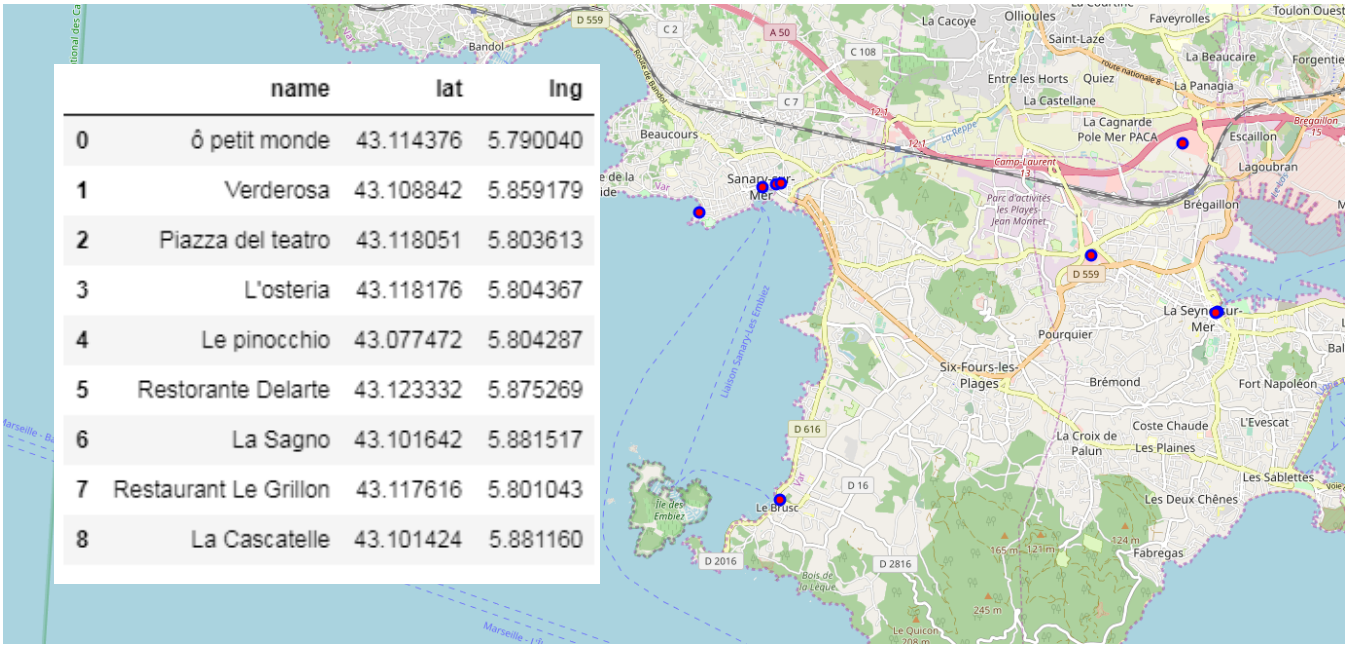
A lot of information is still visible but we can see all the categories missing in the city occupy the first half of the graph, we will now save that information in a dataframe that should be easier to read.

e) <u>Analysis of the missing categories</u>

As shown below we saved the missing categories in a dataframe for easy interpretation, none of those categories that are trending everywhere in the world and across France have been found in the trending venues in Six-fours-les-plages. We will then go through each of those categories and see if we can find any venue related to them. By doing so we will be able to answer our client request.

	Categories	Total
0	Italian Restaurant	0.0
1	Chinese Restaurant	0.0
2	Yoga Studio	0.0
3	Bookstore	0.0
4	Art Gallery	0.0
5	Japanese Restaurant	0.0
6	Wine Bar	0.0
7	Dumpling Restaurant	0.0
8	BBQ Joint	0.0
9	Pub	0.0
10	Spa	0.0
11	Gym / Fitness Center	0.0
12	Vietnamese Restaurant	0.0
13	Gym	0.0
14	Thai Restaurant	0.0
15	Bistro	0.0
16	Tea Room	0.0
17	Candy Store	0.0
18	Beer Bar	0.0
19	Tapas Restaurant	0.0
20	Deli / Bodega	0.0

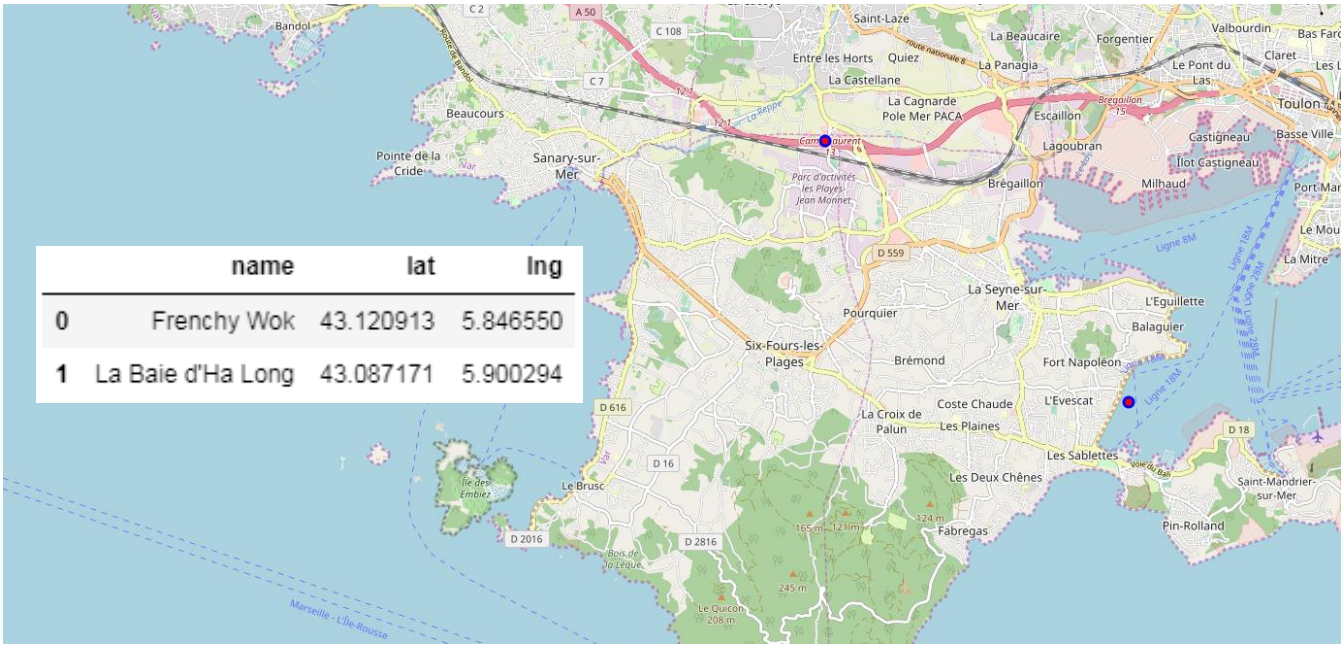
- **Italian restaurants**



	name	lat	lng
0	ô petit monde	43.114376	5.790040
1	Verderosa	43.108842	5.859179
2	Piazza del teatro	43.118051	5.803613
3	L'osteria	43.118176	5.804367
4	Le pinocchio	43.077472	5.804287
5	Restorante Delarte	43.123332	5.875269
6	La Sagno	43.101642	5.881517
7	Restaurant Le Grillon	43.117616	5.801043
8	La Cascatelle	43.101424	5.881160

We found 9 Italian restaurants in the area and none of them came out as trendy so we're not going to offer this option to our client.

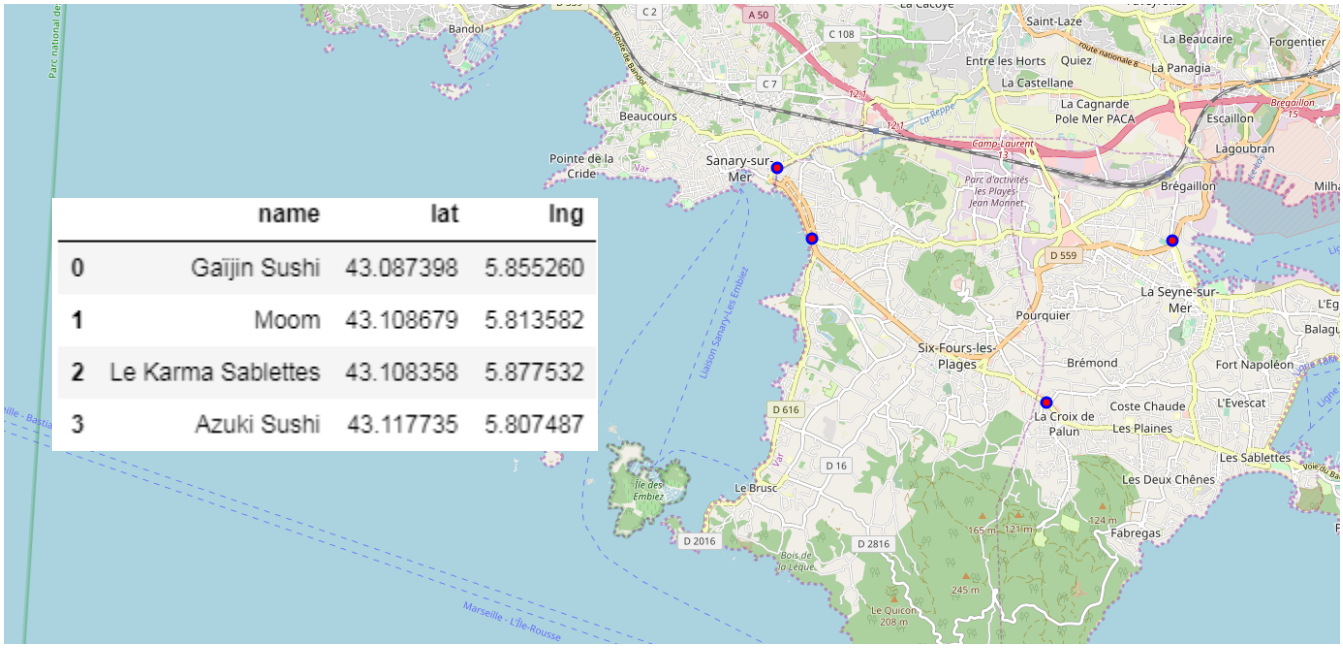
- **Chinese restaurants**



	name	lat	lng
0	Frenchy Wok	43.120913	5.846550
1	La Baie d'Ha Long	43.087171	5.900294

We found only 2 Chinese restaurants in the area, and they seem to be far from our client's establishments, we will save that option.

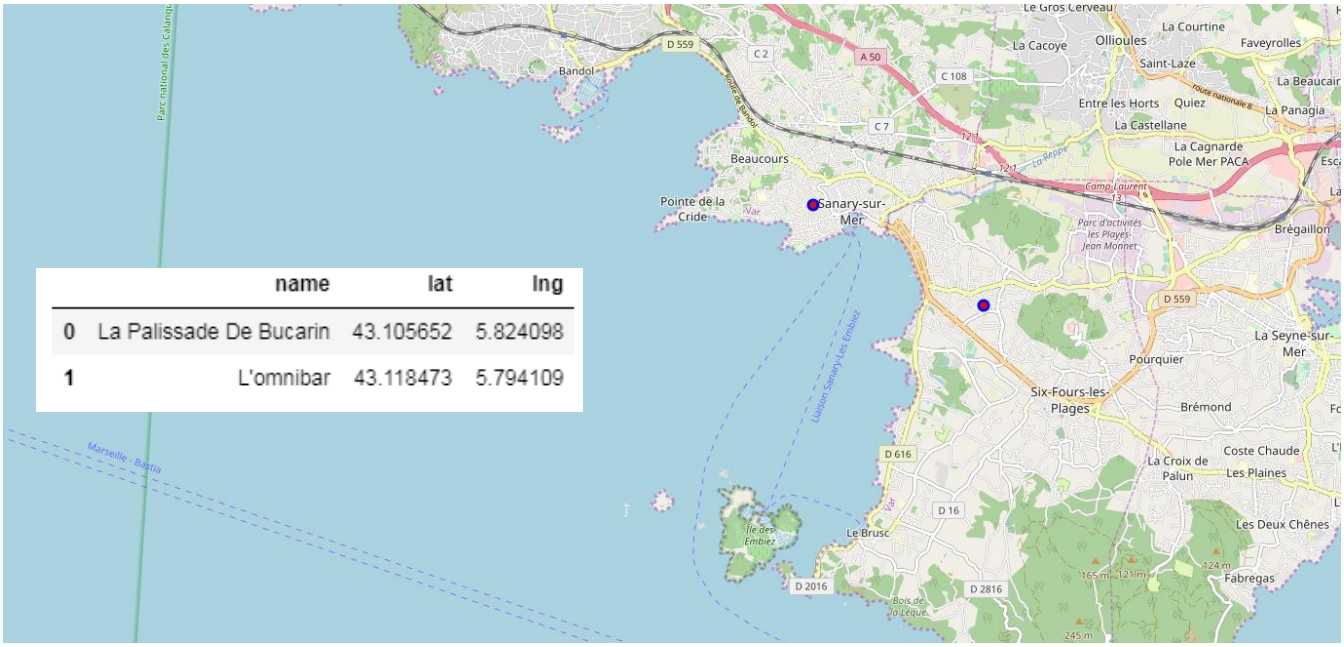
- **Japanese restaurants**



	name	lat	lng
0	Gaïjin Sushi	43.087398	5.855260
1	Moom	43.108679	5.813582
2	Le Karma Sablettes	43.108358	5.877532
3	Azuki Sushi	43.117735	5.807487

We found 4 Japanese restaurants in the area and one of them is owned by our client so we will discard that option.

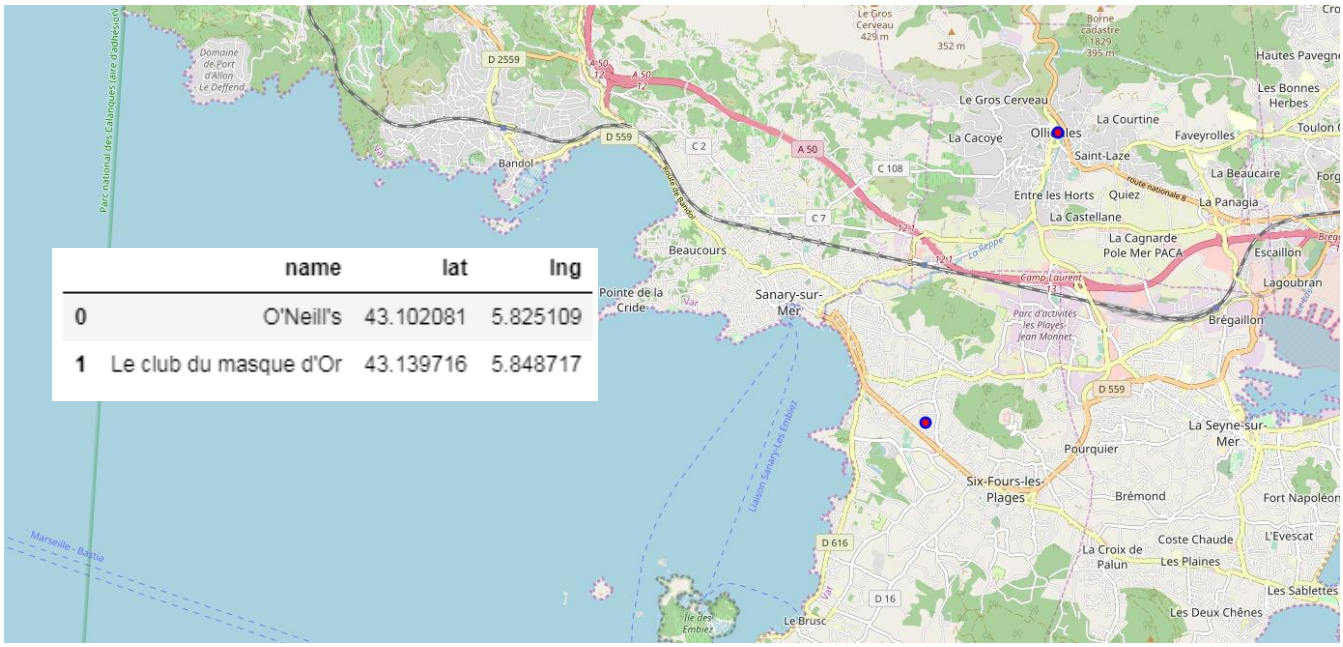
- **Wine bars**



	name	lat	lng
0	La Palissade De Bucarin	43.105652	5.824098
1	L'omnibar	43.118473	5.794109

We found only 2 wine bars in the area, close from our client's restaurants, none of them made it to the trending venues so we will not keep it as an option.

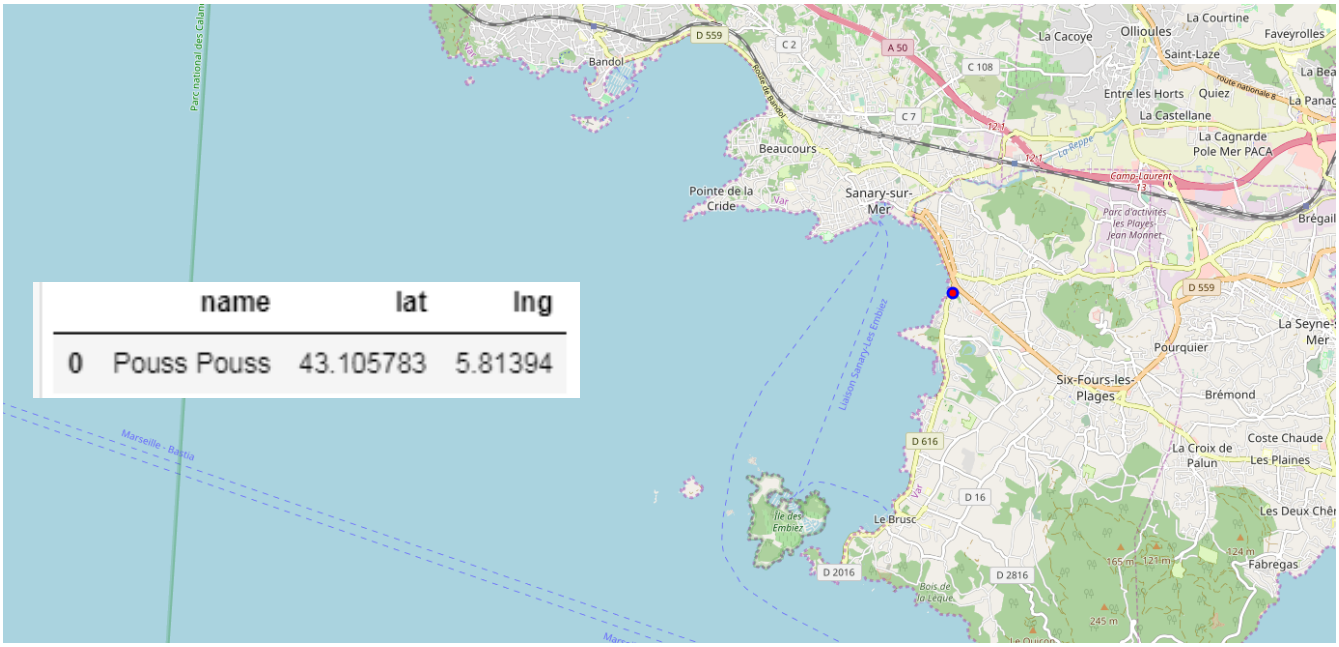
- **Pubs**



	name	lat	lng
0	O'Neill's	43.102081	5.825109
1	Le club du masque d'Or	43.139716	5.848717

We found 2 pubs in the area and one of them seems close to our client's restaurants, we save the option but it will not be in our list of favorites.

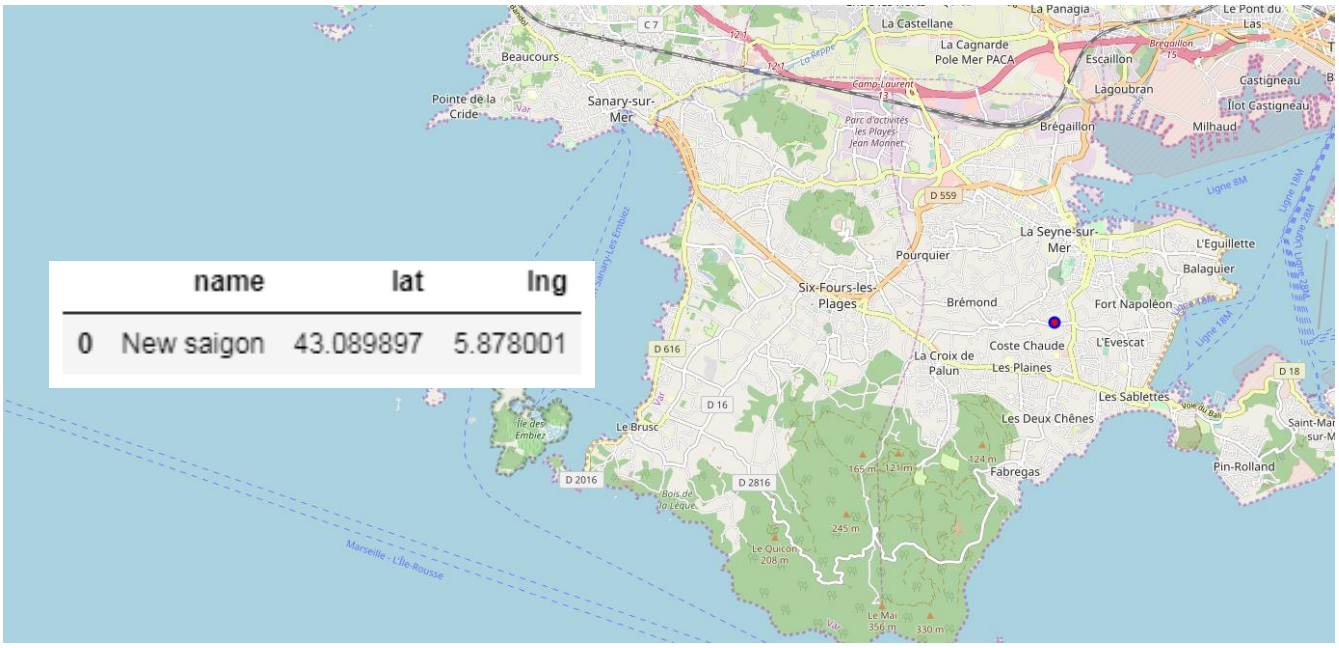
- **Thai restaurants**



	name	lat	lng
0	Pouss Pouss	43.105783	5.81394

Only 1 Thai restaurant and it is one of our client's establishment so we will not save that option.

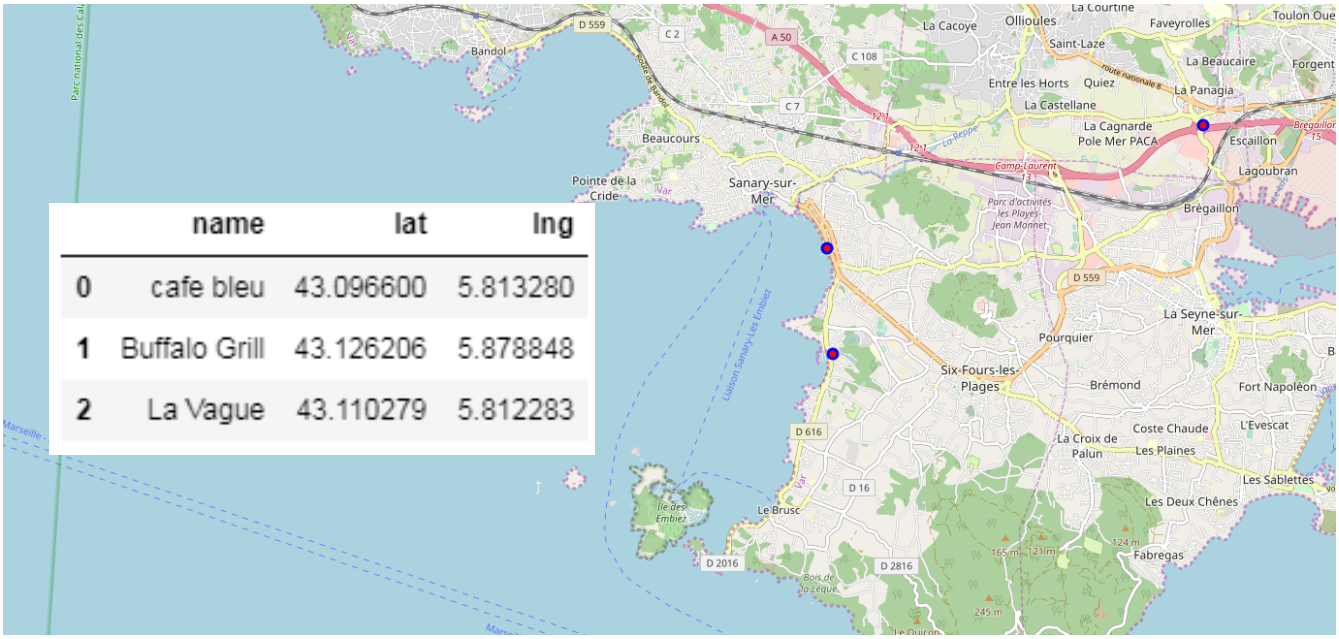
- **Vietnamese restaurants**



	name	lat	lng
0	New saigon	43.089897	5.878001

A single Vietnamese restaurant found, not too close from our client's restaurants so we will save that option.

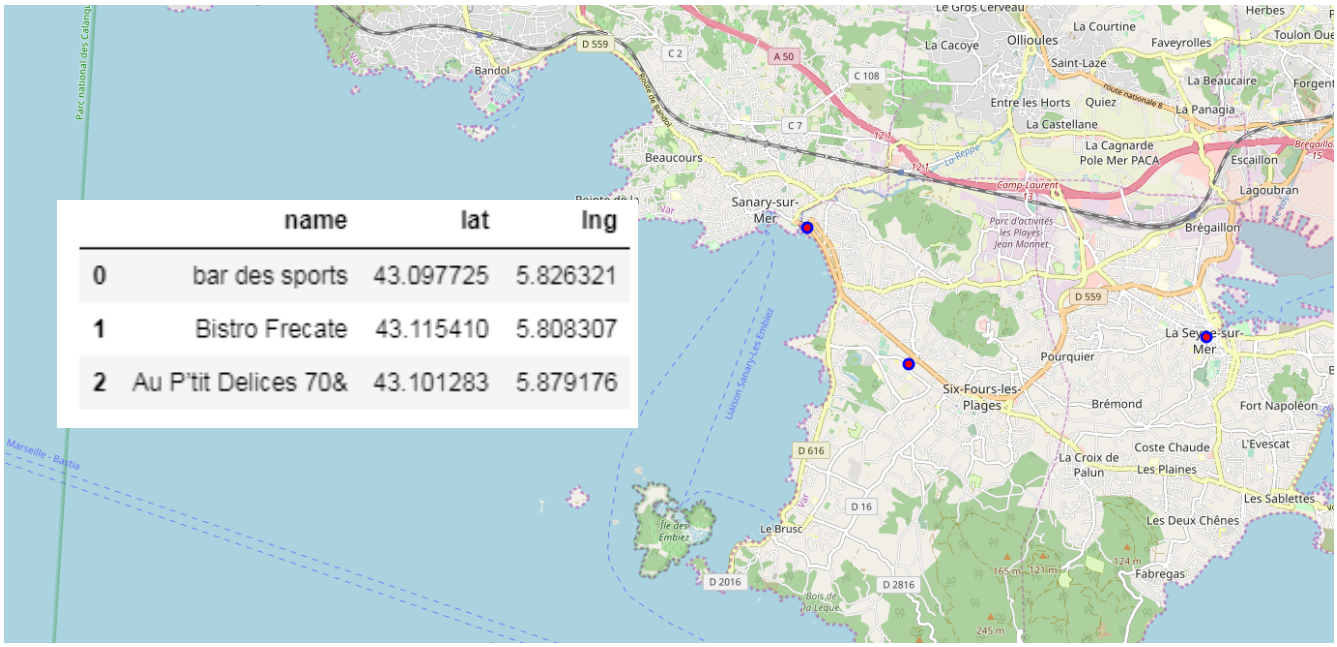
- **Steakhouses**



	name	lat	lng
0	cafe bleu	43.096600	5.813280
1	Buffalo Grill	43.126206	5.878848
2	La Vague	43.110279	5.812283

A total of 3 Steakhouses have been found, one of them is owned by our client so we will not keep that option.

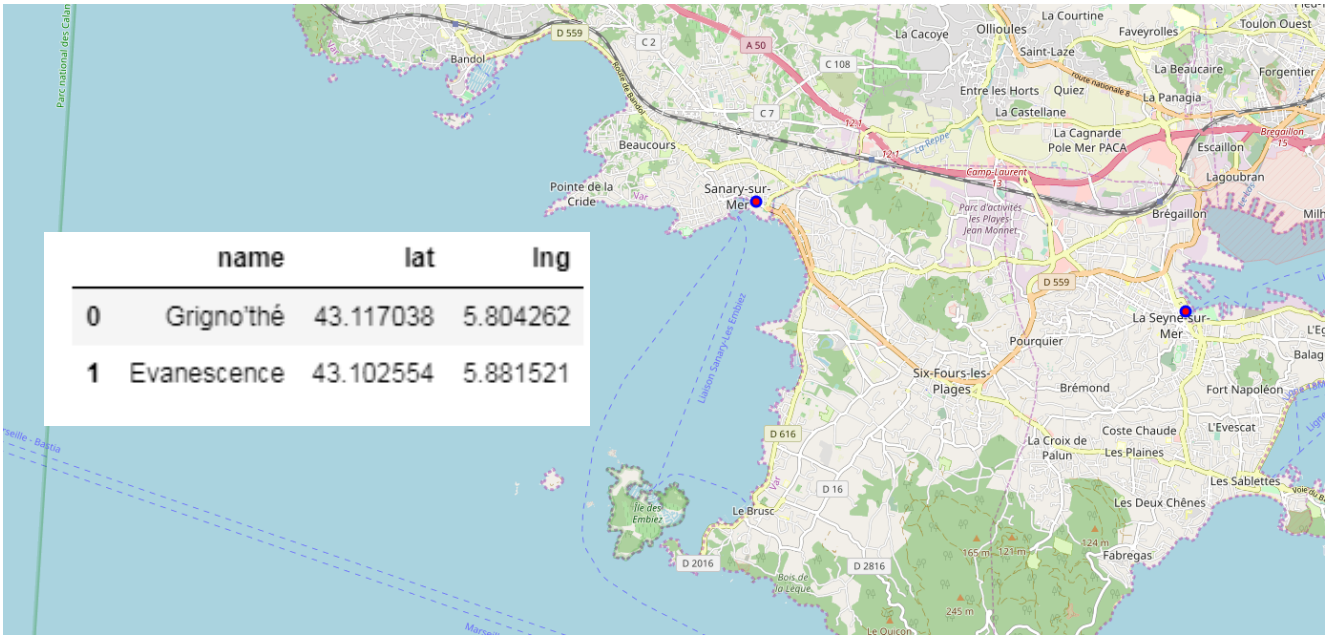
- **Bistros**



	name	lat	lng
0	bar des sports	43.097725	5.826321
1	Bistro Frecate	43.115410	5.808307
2	Au P'tit Delices 70&	43.101283	5.879176

We found 3 bistros, one of them is right next to our client's restaurants and didn't make it in the trending venues so we will not keep the option.

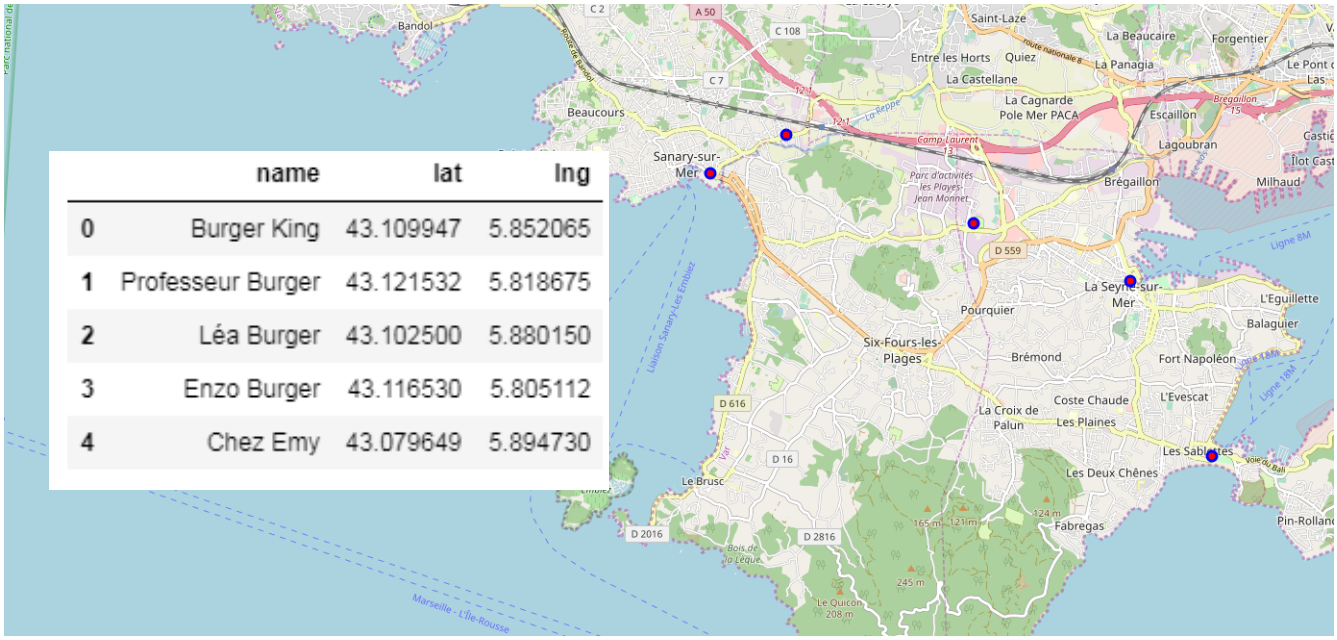
- **Tea rooms**



	name	lat	lng
0	Grigno'thé	43.117038	5.804262
1	Evanescence	43.102554	5.881521

2 tea rooms have been found, one of them is really close to our client's establishments, we will not keep that option.

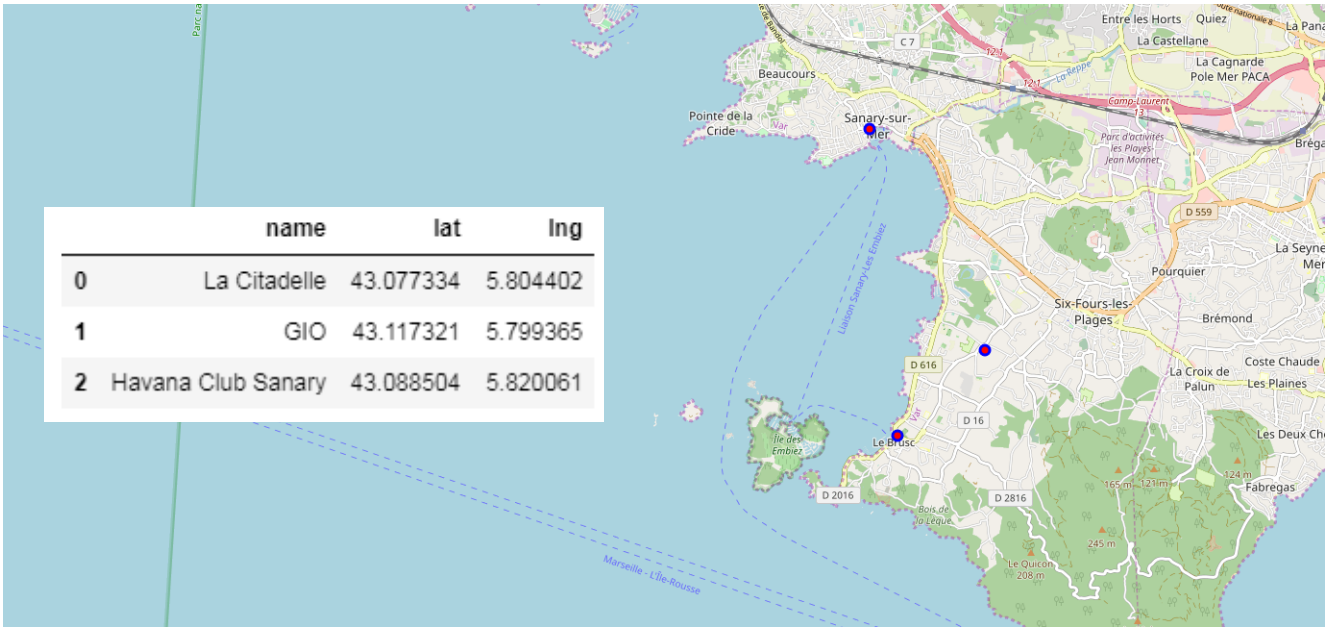
- **Burger joints**



	name	lat	lng
0	Burger King	43.109947	5.852065
1	Professeur Burger	43.121532	5.818675
2	Léa Burger	43.102500	5.880150
3	Enzo Burger	43.116530	5.805112
4	Chez Emy	43.079649	5.894730

We found many burger joints venues and none of them made it to the trending venues with one being really close to our client's restaurants, the option doesn't seem viable.

- **Tapas restaurants**



	name	lat	lng
0	La Citadelle	43.077334	5.804402
1	GIO	43.117321	5.799365
2	Havana Club Sanary	43.088504	5.820061

A total of 3 tapas restaurants with one not too far from our client's restaurants, we will not keep the option.

- **Vegetarian / Vegan restaurants**

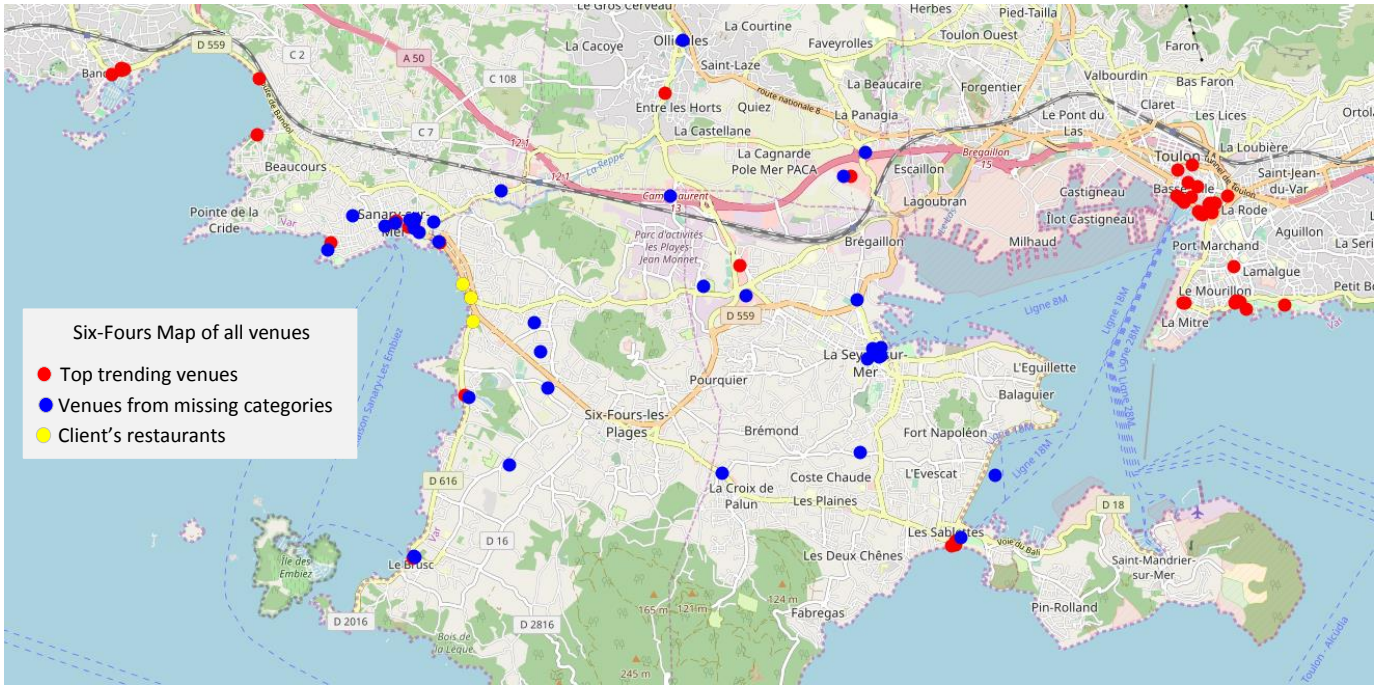
There is no venue from this category so we will offer that option to our client.

- **Middle Eastern restaurants**

There is no venue from this category so we will offer that option to our client.

- **Dumpling restaurants**

There is no venue from this category but the venues we found were only in Asia so we can offer that option but notify our client that it could be a risky option.



We mapped all the venues found in the city and can see that trending venues are concentrated in distinctive parts of the area.

3.Results

As we observed through the multiple dataframes and graphs, a majority of the worldwide trending categories are found in the client's city, result of the globalization as we expected, but some of those categories cannot be found there yet. Also, we can see on the last map that most trending venues are grouped in specific areas when others are spread around.

4.Conclusion

We can conclude that the best options to maximize the chance of having a profitable business quickly in the city of Six-fours-les-plages are as follows:

- Vegetarian / Vegan restaurant
- Middle Eastern restaurant
- Dumpling restaurant (with reserve due to cultural difference)

We can also offer the following options as they are trending and rare:

- Vietnamese restaurant
- Chinese restaurant
- Tapas restaurant
- Wine bar
- Pub

For something different than a restaurant we found that the following categories are trendy and rare in the city:

- Music venue
- Art gallery
- Bookstore

Also, it would be best to open in the trending areas, there are 2 spots close to the client's establishment, about a kilometer north or a kilometer south.

To finish, we noticed that none of the client's restaurants were part of the trending venues, a marketing operation could help with the notoriety and help with the future business as well

Presentation:
https://github.com/toom90034/Coursera_Capstone/blob/master/Capstone%20Project%20Presentation.pdf

Code:
https://github.com/toom90034/Coursera_Capstone/blob/master/The%20Battle%20of%20Neighboods%20copy%201.ipynb

Sources:

- Top world cities: https://www.forbes.com/sites/cartercoudriet/2019/03/07/richest-cities-in-the-world-the-top-10-cities-with-the-most-billionaires/

- Top French cities: https://frenchtogether.com/french-cities/