DETERMINE BEST LOCATIONS TO SETUP NEW STORES FOR A FASHION RETAILER IN PARIS

Problem: A renowned fashion retailer, has begun the rollout of their new stores, which begins in Paris. As they are new to Paris, they would need some help in determining which locations would be best to setup their new stores that can eventually attract a lot of people.

Solution: As part of this project, we are going to make data-driven decisions on the new locations/ districts that are more suitable for their new stores in Paris.

Target audience: This project is going to help any fashion retailer planning to set up their stores in Paris, which is the hub of fashion, explore which location in Paris would be perfect to establish their stores.

Criteria: This retailer brand is not what can be considered as high-end, but they are positioned in the mid-range of the fashion industry. So they do not seek to establish their stores in premium/ plush localities, but rather, in high traffic areas where consumers go for shopping, visit restaurants or go for entertainment.

Observing the data from the other retail stores suggests that the best locations to open new stores may not only be where there are other fashion outlets, but in fact, the best areas are near French restaurants, cafes, wine bars.

DATA ACQUISITION AND CLEANING

Data Source:

- https://opendata.paris.fr/explore/dataset/arrondissements/table/?dataChart
- We will also use FourSquare location data to explore or compare all the 20 districts around Paris

Data Cleaning:

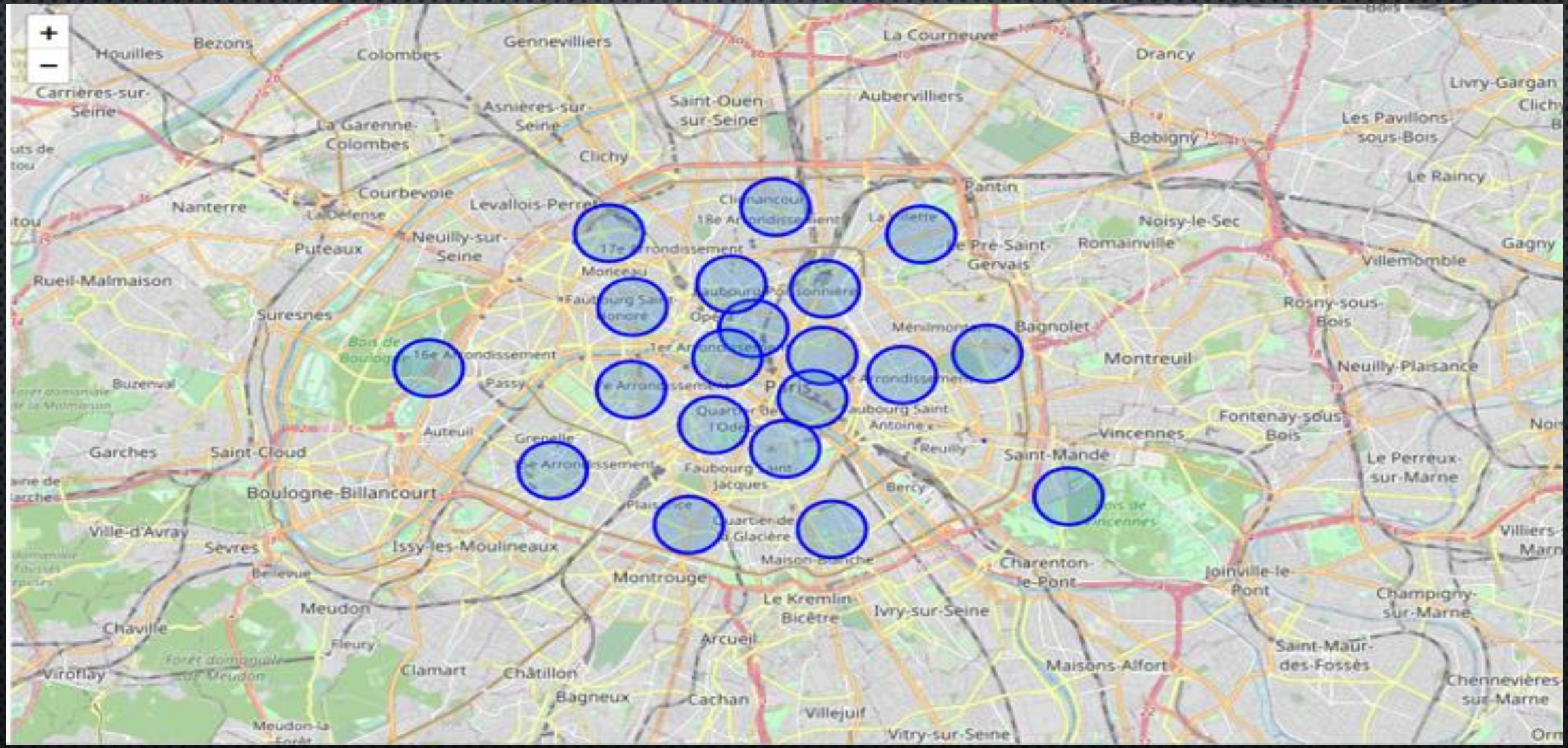
Initially the downloaded data had many invalid characters and numbers in exponential values, which had to be replaced by correct ones.
Secondly, the column names had to be replaced with a more meaningful names for better understanding.
Thirdly, some of the data which were not necessary in the analysis had to be removed.

Cleaned up data

	Dist_Num	Neighborhood	French_Name	Latitude	Longitude
0	3	Temple	3eme Ardt	48.862872	2.360001
1	2	Bourse	2eme Ardt	48.868279	2.342803
2	17	Batignolles-Monceau	17eme Ardt	48.887327	2.306777
3	7	Palais-Bourbon	7eme Ardt	48.856174	2.312188
4	4	Hotel-de-Ville	4eme Ardt	48.854341	2.357630
5	8	elysee	8eme Ardt	48.872721	2.312554
6	18	Buttes-Montmartre	18eme Ardt	48.892569	2.348161
7	1	Louvre	1er Ardt	48.862563	2.336443
8	11	Popincourt	11eme Ardt	48.859059	2.380058
9	13	Gobelins	13eme Ardt	48.828388	2.362272
10	14	Observatoire	14eme Ardt	48.829245	2.326542
11	20	Menilmontant	20eme Ardt	48.863461	2.401188
12	9	Opera	9eme Ardt	48.877164	2.337458
13	19	Buttes-Chaumont	19eme Ardt	48.887076	2.384821
14	15	Vaugirard	15eme Ardt	48.840085	2.292826
15	10	Entrepot	10eme Ardt	48.876130	2.360728
16	16	Passy	16eme Ardt	48.860392	2.261971
17	5	Pantheon	5eme Ardt	48.844443	2.350715
18	6	Luxembourg	6eme Ardt	48.849130	2.332898
19	12	Reuilly	12eme Ardt	48.834974	2.421325

Data Visualization

Map of Paris with all 20 districts

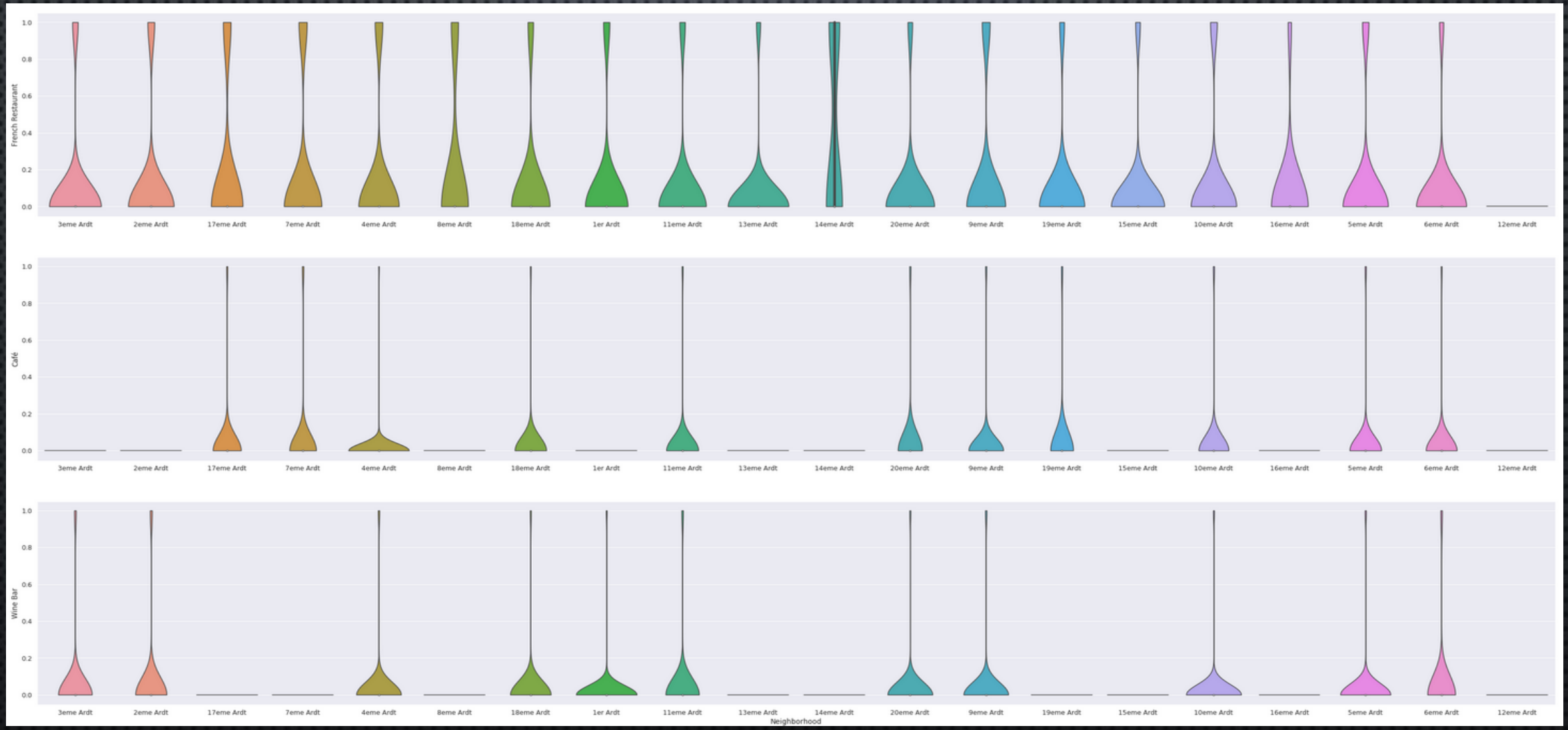


We will use the Foursquare API to explore the Districts of Paris (Neighbourhoods)

Analyse each neighbourhood (one hot encoding) and see the most common top 10 venues for each of them

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
10eme Ardt	French Restaurant	Bistro	Coffee Shop	Indian Restaurant	Café	Hotel	Japanese Restaurant	Pizza Place	Mediterranean Restaurant	Italian Restaurant
11eme Ardt	French Restaurant	Restaurant	Supermarket	Wine Bar	Pastry Shop	Japanese Restaurant	Pizza Place	Cocktail Bar	Theater	Bar
12eme Ardt	Zoo Exhibit	Supermarket	Monument / Landmark	Zoo	Antique Shop	Diner	Fish & Chips Shop	Fast Food Restaurant	Farmers Market	Falafel Restaurant
13eme Ardt	Vietnamese Restaurant	Asian Restaurant	Chinese Restaurant	Thai Restaurant	French Restaurant	Juice Bar	Coffee Shop	Food & Drink Shop	Bookstore	Cosmetics Shop
14eme Ardt	French Restaurant	Hotel	Bakery	Brasserie	Food & Drink Shop	Pizza Place	Bistro	Supermarket	Sushi Restaurant	Tea Room
15eme Ardt	Italian Restaurant	Hotel	French Restaurant	Coffee Shop	Bakery	Japanese Restaurant	Indian Restaurant	Thai Restaurant	Brasserie	Supermarket
16eme Ardt	Plaza	Park	Lake	Pool	French Restaurant	Art Museum	Boat or Ferry	Bus Station	Bus Stop	Diner
17eme Ardt	French Restaurant	Hotel	Italian Restaurant	Bakery	Japanese Restaurant	Plaza	Bistro	Restaurant	Café	Burger Joint

The business criteria was to setup stores where there are *'French Restaurants', 'Cafés' and 'Wine Bars'* - using violin plot to analyze the frequency of distribution of these three venues

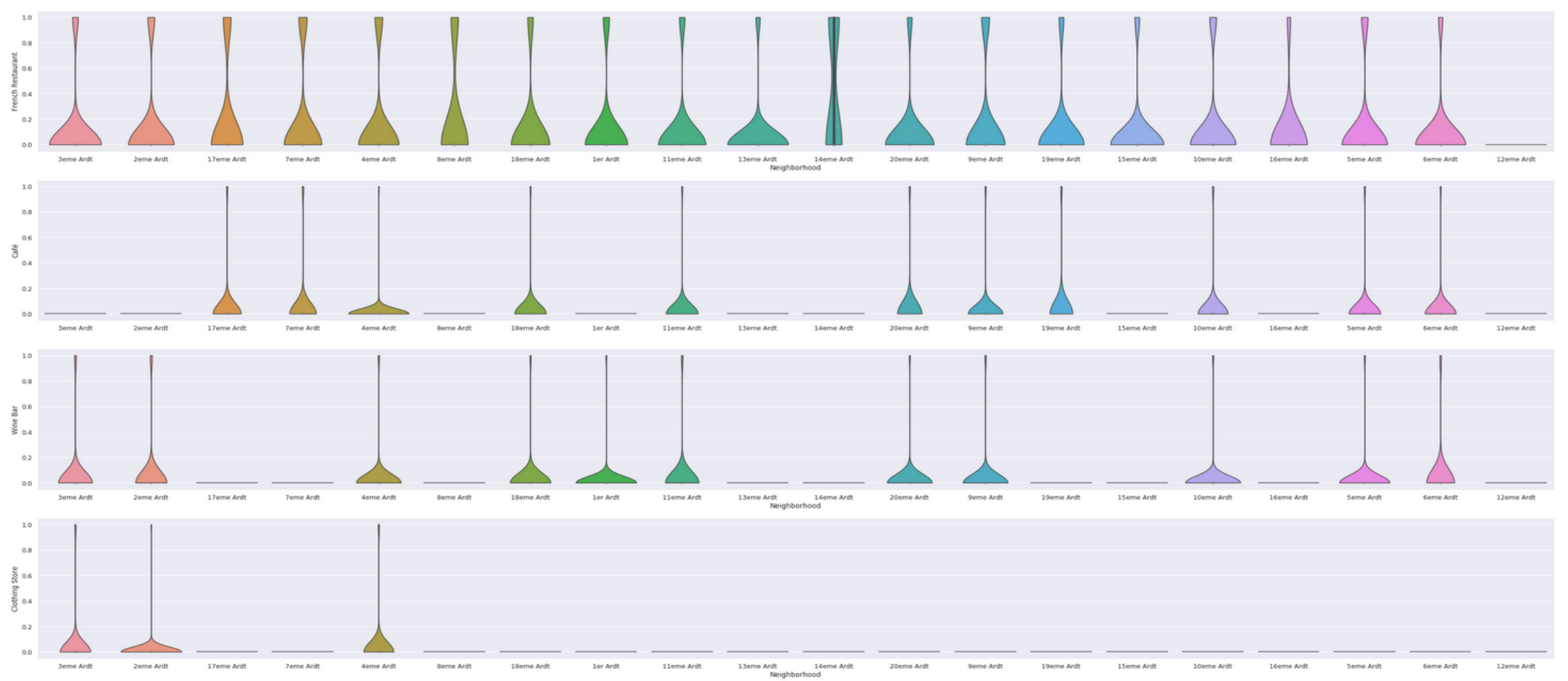


Analysing the plot, there are 8 neighbourhoods where the client can open their new stores, as the 3 specified venues (French Restaurants, Cafes and Wine Bars) are in a great frequency there. The neighbourhoods are:

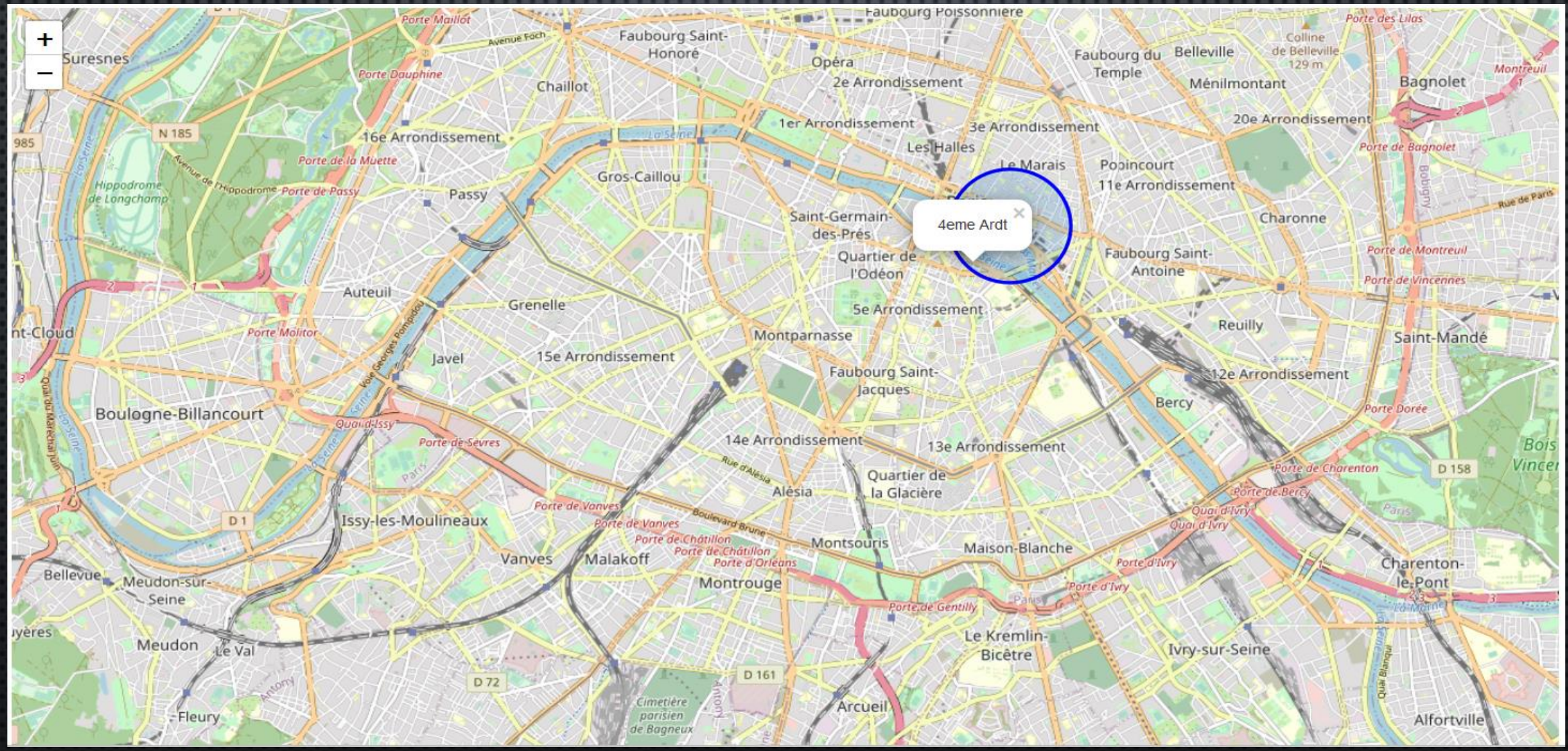
Neighbourhoods
4eme Ardt
5eme Ardt
6eme Ardt
9eme Ardt
10eme Ardt
11eme Ardt
18eme Ardt
20eme Ardt

Including an additional venue category, "Clothing_Store" into the analysis, then we might be able to make some inferences based on the data

Analyzing the combined plot of Clothing_Store and the plot with 3 venues - we see that there is only 1 neighborhood filtered out of 8 – *4eme Ardt*



Visualize the chosen neighborhood on the map of Paris



Conclusions

There are many ways this analysis could have been performed based on different methodologies and perhaps different data sources. I chose the method I selected as it was a straightforward way to narrow down the options.

The analysis and results are not an end point, but rather a starting point that will guide the next part of the process to find specific store locations. The next part will involve domain knowledge of the industry, and perhaps, of the city itself. But the data analysis and resulting recommendations have greatly narrowed down the best district options based on the data available.

Thank You!