Where to start an advertising campaign reaching the desired target in Milan

Introduction

Description & Discussion of the Background

In the city of Milan there are many advertising agencies that through specific advertising campaigns of leafleting and promotions advertise the most varied products to companies and citizens.

These advertising companies have several customers who request to advertise their products to specific targets, so that the advertising campaign is as effective as possible and there is an effective return on investment in advertising.

Advertising companies need to understand where within the city of Milan it is possible to reach the category of subjects requested by the customer with their advertising campaigns.

In particular for b2b campaigns through leaflets and promoters it is necessary to know where the various categories of merchants are positioned and therefore it is necessary to have a thorough knowledge of the territory of the city.

The multitude of economic activities and the complexity of the territory of a city like Milan makes it difficult to reach target customers for advertising campaigns.

For this reason, to make the advertising campaign more effective and efficient, it is necessary to analyze the data relating to the neighborhoods and categories of shops located within the city.

In this analysis I will try to identify neighborhoods with the highest density of restaurants, as I suppose that our advertising campaign is aimed precisely at restaurateurs in the city of Milan.

Data Description

To have the knowledge of the Milan area and the location of the restaurants on it, I need to acquire the geographical data of Milan, the division into neighborhoods and the positioning of commercial activities.
I recovered the data necessary to carry out the analysis from the following sources:

- data relating to the geolocation of the districts of Milan. These data are recoverable and downloadable in geojson format from the website of the municipality of Milan
  https://dati.comune.milano.it/dataset/e8e765fc-d882-40b8-95d8-16ff3d39eb7c
- the geolocation data relating to the restaurants in the city of Milan will be acquired using the Foursquare api.

These data will be correlated in order to identify neighborhoods with the highest concentration of restaurants.

It is also possible to correlate these data with other variables that could be useful, such as the population density etc...

Data cleaning

It was necessary to clean up the data as mainly the data relating to the neighborhoods had formatting that did not allow the correct analysis of the data.

it was therefore necessary:

- correct the field that identified the neighborhoods, as the field contained multiple descriptions.

- eliminate duplicates.
- identify and connect the geographical coordinates to the neighborhoods
- change some terminology for identifying neighborhoods.

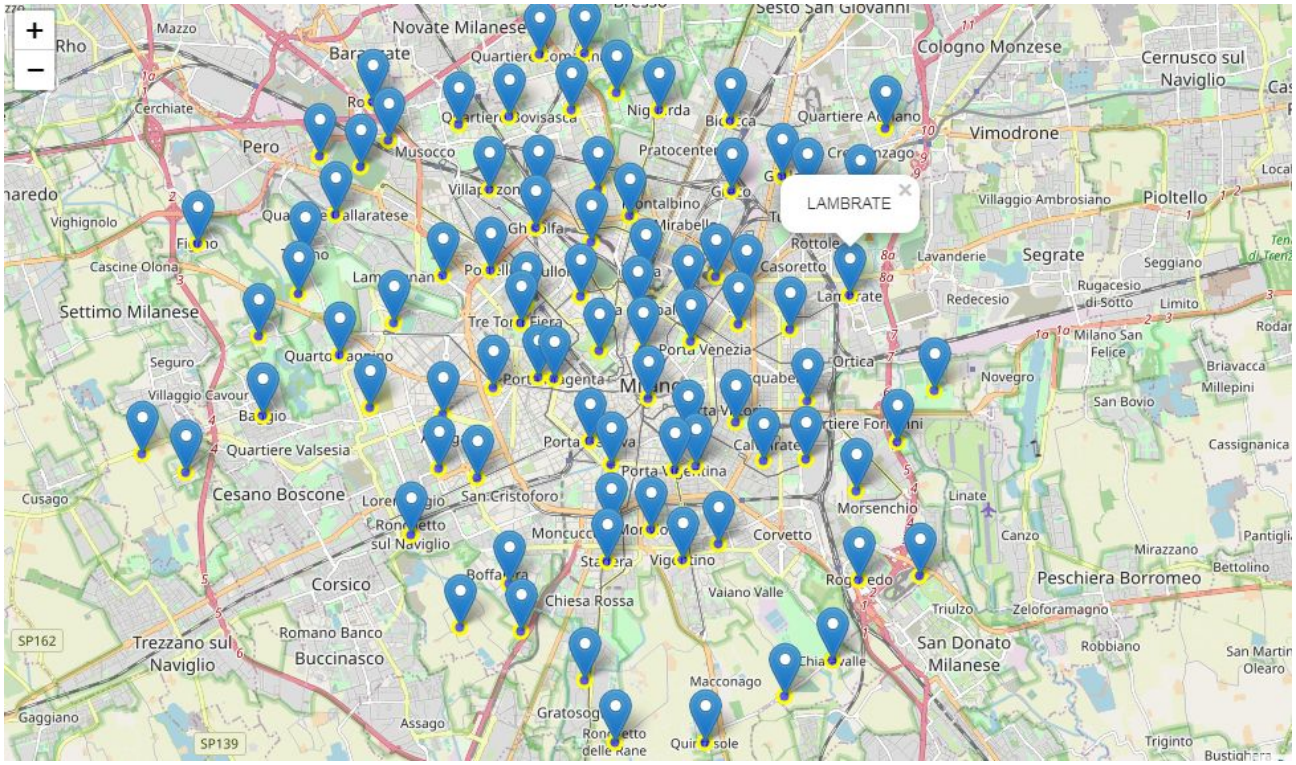
Methodology

In this project we will direct our efforts on detecting areas of Milan that have High restaurant density, particularly those with high number of restaurants. We will limit our analysis to an area 500m around the center of each neighborhood.

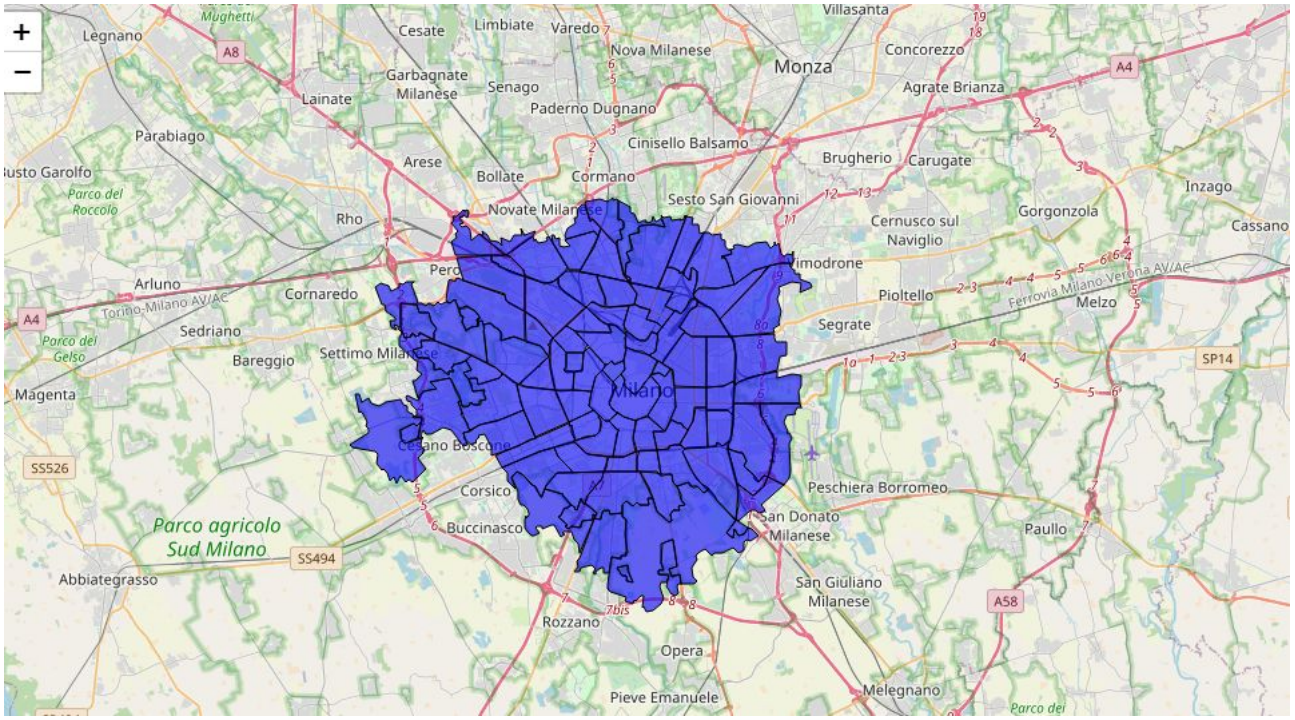
In the first step we have collected the required data to locate the list and coordinates of the districts of Milan.

	Borough	Neighborhood	City	Nation	Latitude	Longitude
0	48	RONCHETTO SUL NAVIGLIO	Milano	It	45.4397	9.12822
1	64	TRENNO	Milano	It	45.4906	9.10087
2	67	PORTELLO	Milano	It	45.4878	9.14901
3	81	BOVISASCA	Milano	It	45.5158	9.15378
4	84	PARCO NORD	Milano	It	45.5199	9.18131
...	...	...	...	...	...	...
82	68	PAGANO	Milano	It	45.4683	9.1611
83	2	BRERA	Milano	It	45.4735	9.18841
84	33	ROGOREDO	Milano	It	45.4316	9.24448
85	17	ADRIANO	Milano	It	45.5136	9.2512
86	53	LORENTEGGIO	Milano	It	45.4517	9.13562

Once the data relating to the geographical coordinates were recovered, we were able to draw a map of Milan with the evidence of the individual districts



And a choropleth maps



In the second step we use Foursquare to identify the restaurants in the neighborhoods, create a dataframe containing all the restaurants for each district and finally select the district with the highest density of restaurants.

```
PORTA GARIBALDI     35
BRERA               33
DUOMO               31
LODI                27
PORTA GENOVA        25
                    ..
CANTALUPA            1
STEPHENSON           1
ORTOMERCATO          1
BRUZZANO             1
TRE TORRI            1
Name: Quartiere, Length: 62, dtype: int64
```

Results

Our analysis shows that although there is a great number of restaurants in Milan. At the end of our work we have a list with the total number of restaurants in each district, from which we can deduce which are the areas with the greatest presence of restaurants

Discussion & Conclusion

At the end of our analysis we have identified which are the 5 districts with the greatest number of restaurants where we can launch our advertising campaign.

	Quartiere
PORTA GARIBALDI	35
BRERA	33
DUOMO	31
LODI	27
PORTA GENOVA	25

In this case the analysis was used to identify the presence of restaurants, but by simply changing the descriptive category searched with Foursquare apis,

it will be possible to adapt the search to our needs. It will be possible, if necessary, to identify where there is the greatest concentration of supermarkets or medical offices or other activities.