Let's move to Germany
Help Italian expats to find a new home

1. Introduction/Business Problem

Munich, located in South-Germany and also known as "the Northest Italian city", is the second most populous city in Germany, with 1.5 Million inhabitants. The city, major center for science, technology, culture and business, hosts a lot of multinational companies and it is a major center for education. It is ranked the first german city regarding the quality of life, and third worldwide (2018 Mercer survey). Considering life-quality, the competition with other European cities is therefore very high.

A lot of Italian expats are nowadays choosing Germany, and Munich in particular, to improve their professional and international experience. On the other hand, Italians are known to get easily homesick, missing, besides the Italian weather and the sea, also Italian food and life-style.

Aim: This project will target Italian expats wanting to move to the German city, and help them taking a mindful choice. The rising questions are therefore: is Munich comparable to an Italian city? There are Italian cultural centers, restaurants and shops, in order to help expats feeling less "homesick?" Where are they mostly located?

Description of data

The question will be answered accessing the data about Munich from the Foursquare API and considering the venues related to Italy and the Italian culture.

Munich coordinates are: 48.1351°, 11.5820° .

The Foursquare API will be used to explore the neighborhoods in Munich and find venues with the explore command. In Munich there are 25 districts. As there are no coordinates for each district, they have been manually retrieved and added to the data.

Borough	Latitude	Longitude
Altstadt - Lehel	48.0810	11.3420
Ludwigsvorstadt - Isarvorstadt	48.7380	11.3353
Maxvorstadt	48.9000	11.3480
Schwabing-West	48.9400	11.3510
Au - Haidhausen	48.7550	11.3520
Sendling	48.7170	11.3229
Sendling - Westpark	48.7200	11.3155
Schwanthalerhoehe	48.8200	11.3230
Neuhausen - Nymphenburg	48.9250	11.3100
Moosach	48.1100	11.3100
Milbertshofen - Am Hart	48.1154	11.3435
Schwabing - Freimann	48.1050	11.3610
Bogenhausen	48.8530	11.3700
Berg am Laim	48.7200	11.3740

Trudering - Riem	48.7000	11.3930
Ramersdorf - Perlach	48.6100	11.3730
Obergiesing	48.6400	11.3540
Untergiesing - Harlaching	48.5320	11.3338
Thalkirchen - Obersendling - Forstenried - Fuestenried - Solln	48.5200	11.3100
Hadern	48.6380	11.2755
Pasing - Obermenzing	48.8450	11.2735
Aubing- Lochhausen - Langwied	48.9300	11.2510
Allach - Untermenzing	48.1200	11.2710
Feldmoching - Hasenbergl	48.1240	11.3230
Laim	48.8250	11.2950

Methodology

First of all, the necessary Python libraries and packages necessary to data processing, such as *numpy* and *pandas*, as well as *json* and *folium* to manage maps, and *sklearn*, were imported in the workspace.
The first step was to explore the dataset *Monaco.csv*, in order to discover the structure of the dataset and count the number of boroughs in the city of Munich. A preview of the file structure is given in Figure 1.

	PostalCode	Borough	Latitude	Longitude
0	80331	Altstadt-Lehel	48.143765	11.563515
1	80335	Ludwigsvorstadt-Isarvorstadt	48.130778	11.548124
2	80333	Maxvorstadt	48.148909	11.545498
3	80796	SchwabingWest	48.166652	11.552057
4	81541	Au-Haidausen	48.130288	11.576887

Figure 1

The city has 25 boroughs. To have a better understanding of the distribution of the districts in the city, the labels for each borough were superimposed to the map of the city using folium.
The available data about geolocalisation were then connected to Foursqaure API, to start exploring what is offered by the city. For each borough, the top venues in a radius of 500m were retreived. In total, 170 listed vesues were listed. Figure 2 represents how the first rows of the table look like.

	Borough	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Altstadt-Lehel	48.143765	11.563515	The Charles Hotel	48.142935	11.562526	Hotel
1	Altstadt-Lehel	48.143765	11.563515	Königsplatz	48.145903	11.565099	Plaza
2	Altstadt-Lehel	48.143765	11.563515	Sophia's	48.142795	11.562438	Italian Restaurant
3	Altstadt-Lehel	48.143765	11.563515	Hans im Glück - Burgergrill	48.143983	11.562764	Burger Joint
4	Altstadt-Lehel	48.143765	11.563515	Noppakao	48.143883	11.559871	Thai Restaurant

Figure 2

Boroughs were sorted based on the number of venues listed in Foursquare, and the results displayed in the bar plot in Figure 3.
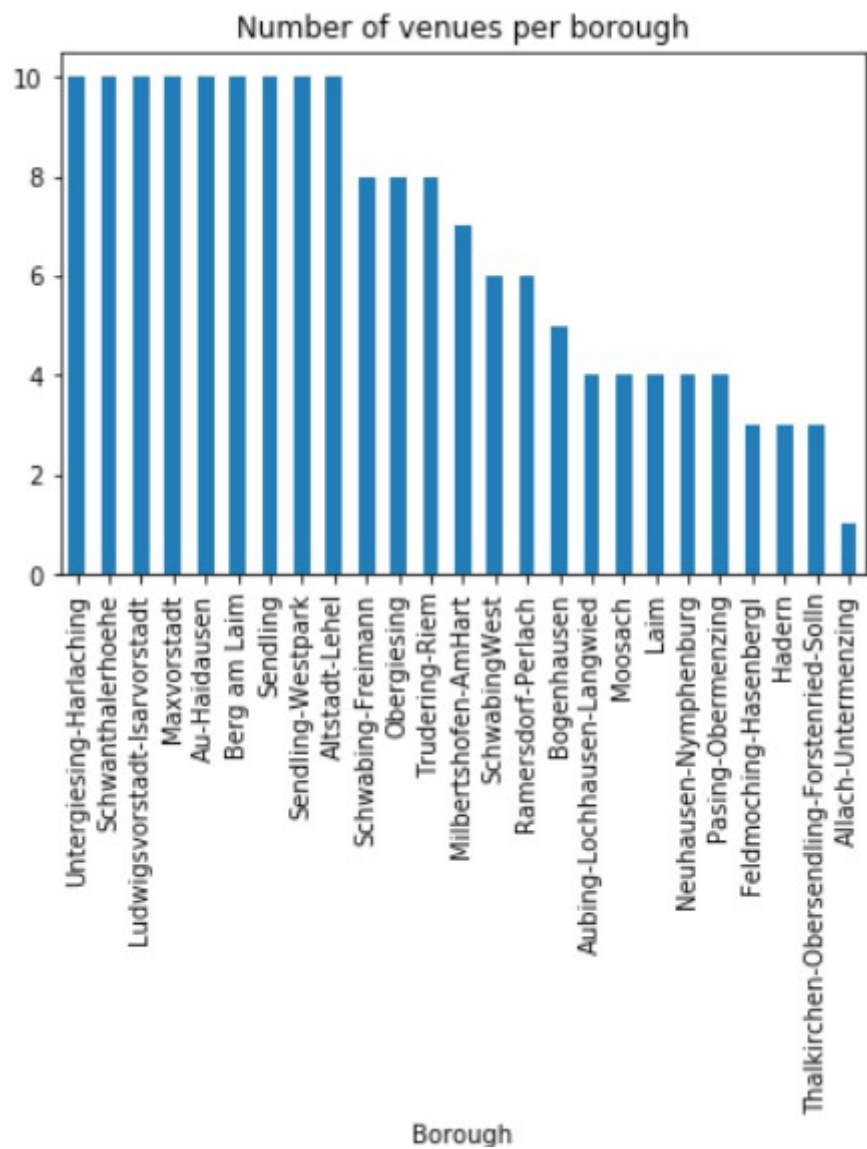

Figure 3

Each borough was then explored to find out the top listed venues according to Foursquare categories. This was done using dummy variables that code categories into 0/1.
In that way it is possible to have an overwview of each borough together with the top venues and create a table listing the top 10 locations for each borough, as in Figure 4 (preview).

	Borough	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
0	Allach-Untermenzing	Botanical Garden	Vietnamese Restaurant	Fountain	Concert Hall	Convenience Store	Doner Restaurant	Drugstore	Fish Market	Food & Drink Shop	Gastropub
1	Altstadt-Lehel	Italian Restaurant	Hotel	Art Museum	Thai Restaurant	History Museum	Asian Restaurant	Bar	Plaza	Middle Eastern Restaurant	Burger Joint
2	Au-Haidausen	Café	Afghan Restaurant	Board Shop	Coffee Shop	Cocktail Bar	Plaza	Pizza Place	Tea Room	Bakery	Fountain
3	Aubing-Lochhausen-Langwied	Shopping Mall	Playground	Bakery	Supermarket	Vietnamese Restaurant	Coffee Shop	Concert Hall	Convenience Store	Doner Restaurant	Drugstore
4	Berg am Laim	Climbing Gym	Supermarket	Poke Place	Drugstore	Fish Market	German Restaurant	Bar	Beach Bar	Thai Restaurant	Gym
5	Bogenhausen	Park	Bus Stop	Trattoria/Osteria	Vietnamese Restaurant	Food & Drink Shop	Concert Hall	Convenience Store	Doner Restaurant	Drugstore	Fish Market
6	Feldmoching-Hasenbergl	Convenience Store	Racetrack	Lottery Retailer	Vietnamese Restaurant	Food & Drink Shop	Coffee Shop	Concert Hall	Doner Restaurant	Drugstore	Fish Market
7	Hadern	Bus Stop	Massage Studio	Vietnamese Restaurant	Fountain	Concert Hall	Convenience Store	Doner Restaurant	Drugstore	Fish Market	Food & Drink Shop

Figure 4

These results were however valid considering the entire offer of the city.

And what about our italian expat?

In order to target the results, ten categories of venues were arbitrarly selected as interesting: *Bar, Café, Soccer Field, Trattoria/Osteria, Italian Restaurant, Pizza Place, Fish Market, Ice Cream Shop, Cocktail Bar* and *Supermarket.* It is possible to visualize how the interesting category are distributed (Figure 5). Not surprisingly, the most common is Supermarket, followed by Osteria and Cafés.
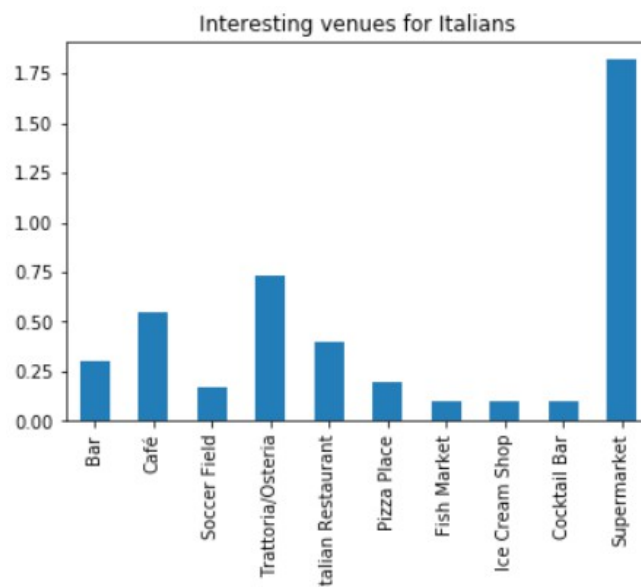

Figure 5

A score is computed for each borough to select which ones have more interesting venues for future italian expats. The boroughs can be sorted based on the computed index, to find out the best 5 boroughs for italian expats. For each borough it was then possibile to find out the 5 main categories of venues.

Results

From the above described analysis can be stated that the five Munich boroughs with the majority of venues for italians are (Figure 6):

	Borough	Score
2	Au-Haidausen	0.5
23	Trudering-Riem	0.5
17	Schwabing-Freimann	0.5
10	Maxvorstadt	0.4
4	Berg am Laim	0.3

Figure 6

For each of them, the five most common category venues were retrieved (Figure 7).

	Borough	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
2	Au-Haidausen	Café	Cocktail Bar	Pizza Place	Supermarket	Ice Cream Shop
23	Trudering-Riem	Supermarket	Cocktail Bar	Ice Cream Shop	Fish Market	Pizza Place
17	Schwabing-Freimann	Supermarket	Trattoria/Osteria	Café	Cocktail Bar	Ice Cream Shop
10	Maxvorstadt	Italian Restaurant	Pizza Place	Trattoria/Osteria	Supermarket	Cocktail Bar
4	Berg am Laim	Supermarket	Fish Market	Bar	Cocktail Bar	Ice Cream Shop

Figure 7

Finally, the Munich map was recreated, by highliting with red circles the locations of the most interesting boroughs (Figure 8).
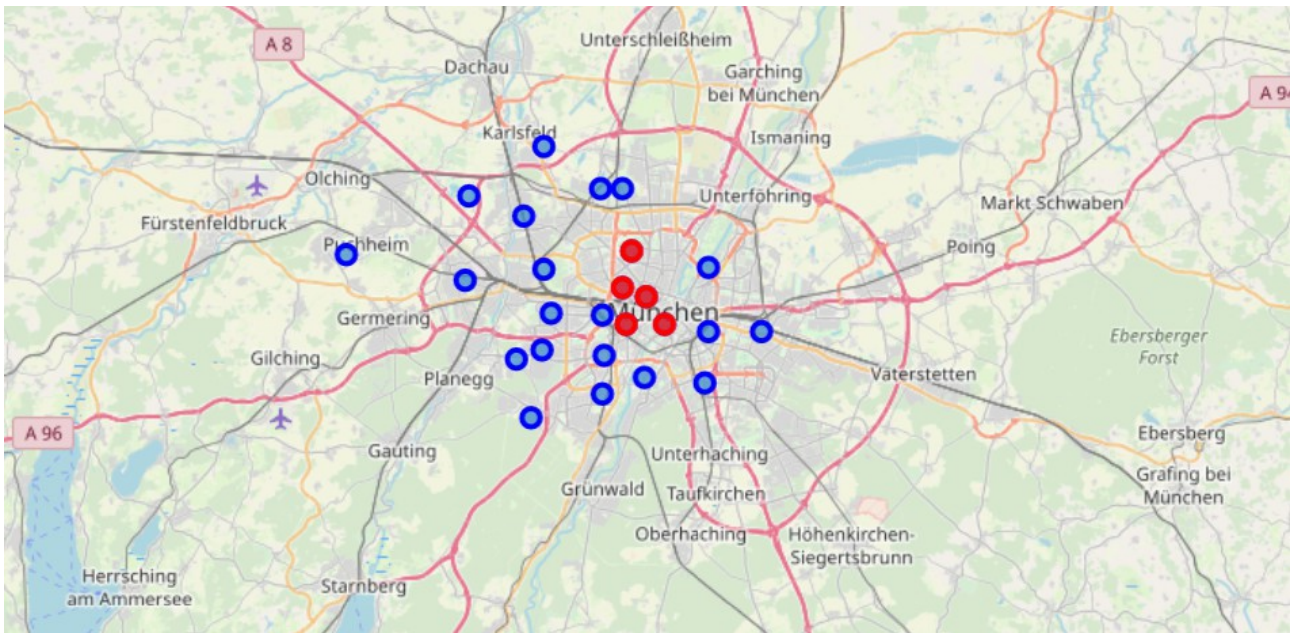
Figure 8

Discussion

In order to have a better quality of life and feel less homesick, it would be raccomendable to live in one of the central borough of Munich, in particular one of the five highlighted by this analysis. This will allow new Italian expat to still feel connected to the home land and maybe meet new people in the same situation.

Conclusion and future directions

This analysis could be helpful while planning to move to Munich from Italy. Further analysis could be done to compare the city with some other italian city (e.g. Milano), to find out similarities and discrepancies between towns or district of the town.
Furthermore, it could be interesting to include in the analysis also other venues of interst, such as theaters, cultural centers, cinemas... in order to improve the life of future expats.