

Capstone Project – Exploring Helsinki

Introduction / Business Problem

An international travel agency which is established in many cities of the world is looking to expand its arrangements in Helsinki, Finland.

They are looking to get the information on the neighborhoods and the important aspects one considers when visiting a new city.

They need information on the hotels, restaurants, pubs, cafes, etc. along with the transport facilities available, viz, bus lines, train lines, etc.

To make the travel more convenient, information about emergency services is also provided.

With this information the travel agency can plan better and provide better services to their customers.

Data

The data for the given problem is taken from [GeoNames](#). The Postal Code data for Finland is converted to .csv format. This dataset contains the columns – Country code, postal code, place name, state, province, community along with others, and most importantly latitudes and longitudes. This data contains provinces other than Helsinki also, so it needs to be filtered such that it contains only the neighborhoods in Helsinki. It is also filtered to include only the required columns – **Postal Code, Borough (Province), Neighborhood (Community), Latitude and Longitude**. This is updated to a dataset. The following image shows an example of the dataset.

	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	100	Helsinki	Helsinki	60.1714	24.9316
1	120	Helsinki	Helsinki	60.1632	24.9391
2	130	Helsinki	Helsinki	60.1645	24.9487
3	140	Helsinki	Helsinki	60.1578	24.9525
4	150	Helsinki	Helsinki	60.1570	24.9369

Once this dataset is ready, [FourSquare](#) data is used in order to explore the neighborhood of Helsinki. Folium is used to create the required maps. Foursquare is used to get relevant information of locations of hotels, restaurants, pubs, places to visit, etc.

Methodology

After the required dataset is loaded, an instance of the geocoder is defined and the latitude and longitude for the given address, in this case, Helsinki, Finland is obtained. This is used to plot a map of the neighborhoods in Helsinki (with different geographical coordinates) using Folium.

Client ID and Client Secret are used to access the FourSquare API.

We then send a request to obtain the top 100 locations within a radius of 1000. The results obtained are converted into a data frame and using Folium it is plotted into a map in order to visualize the locations. From the results' list, we see that the top locations include Museums, Restaurants, Hotels, Cafes, etc. Hence, we will try to explore more into these categories.

From a travel agency point of view, we can go on exploring the neighborhood step by step.

First, we can send a request to get a list of **Hotels** for the tourists to stay during their visit to Helsinki. Getting a list of the results and plotting o the map helps to visualize the locations.

Next, considering the tourists will want to eat, sending a request to get the list of **Restaurants** and similarly plotting the map.

For snacks and coffee, a list of **Cafes** can be obtained.

Finland is known for its culture and **Museums**, so next in a list of places to visit, list of different Museums is obtained.

In order to help the tourists, buy souvenirs easily, a list of **Gift Shops** is provided. Also, keeping in mind the night life, a list of **Pubs** is obtained and plotted on the map.

Helsinki, Finland is known to be one of the few places from where Northern Lights are visible. Hence it is an important travel destination. Northern lights are known to be visible from **Parks** some of which also include observatories. This list is also included along with the map.

The next step is providing the necessary transport arrangements for the tourists to explore Helsinki.

A request to obtain the **Bus Lines**, **Metro Lines** and also **Boat/Ferry** rides is sent. The results are plotted on a map for easier understanding.

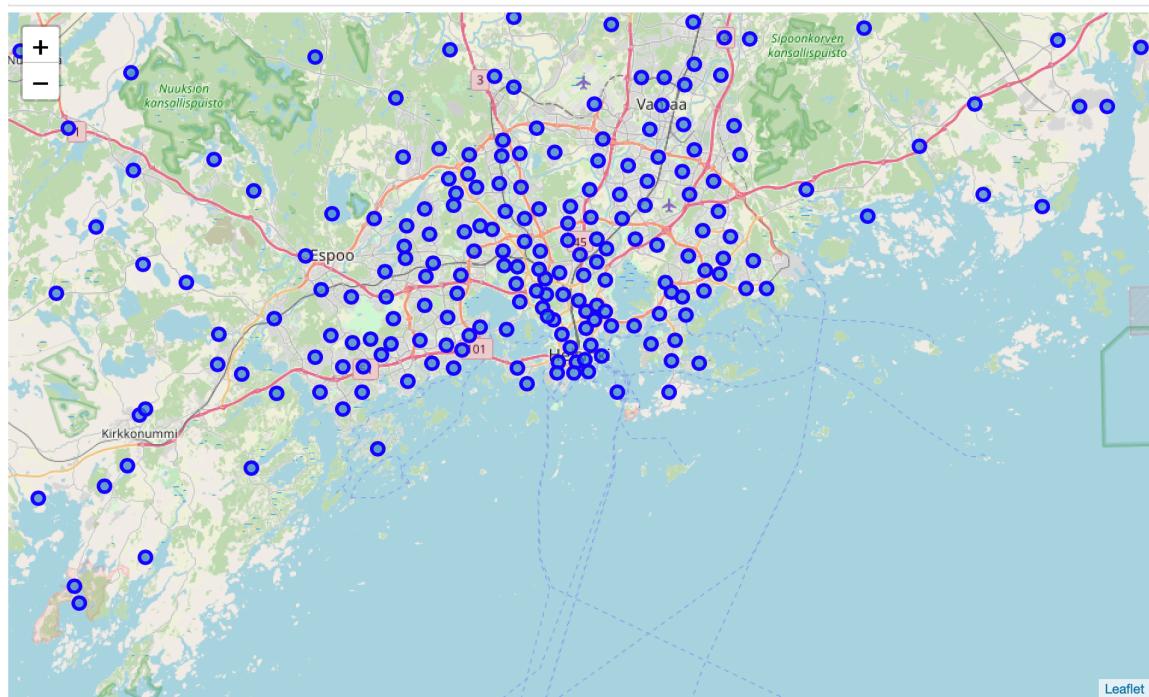
Lastly, for the tourists to be prepared in case of an emergency, a list of **hospitals**, **police station** and **tourist information centers** is obtained along with the required maps.

This information will help make the travel easier for the travel agency and in turn the tourists.

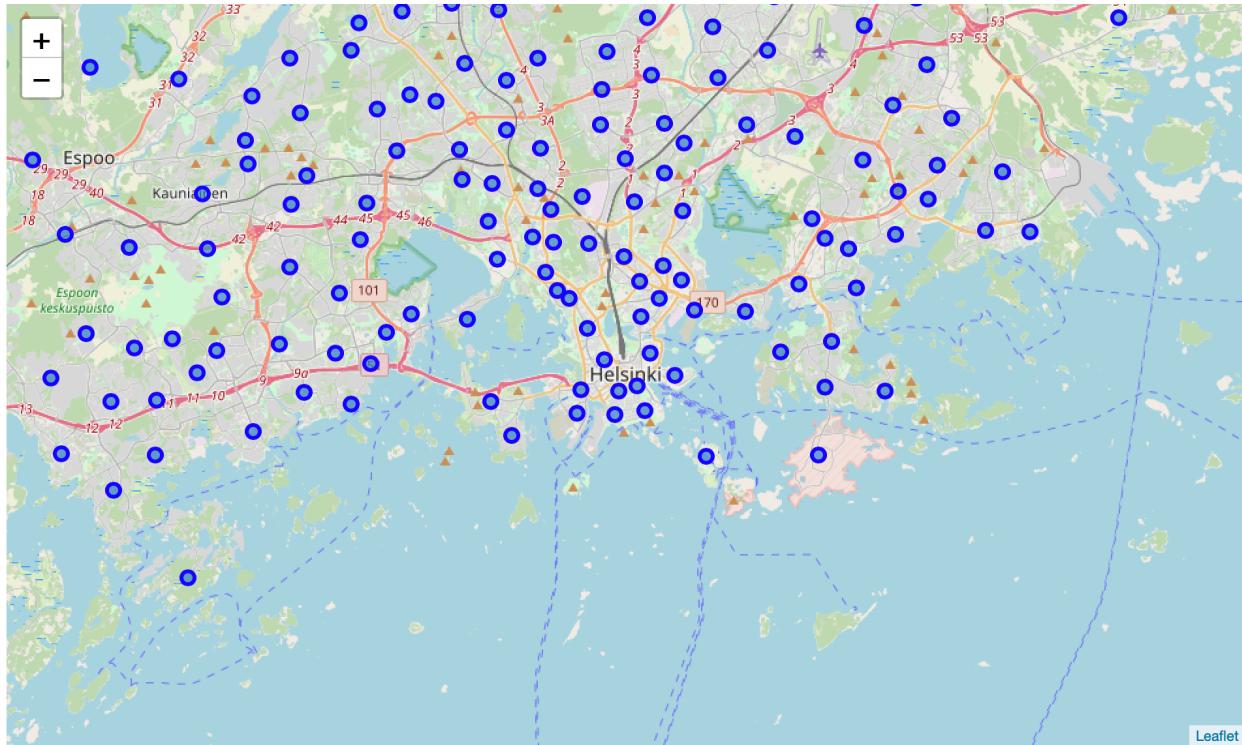
Results

The following section provides the results obtained from the requests sent and hence can be used to make the itinerary as required.

First a map for the neighborhoods in Finland is obtained.



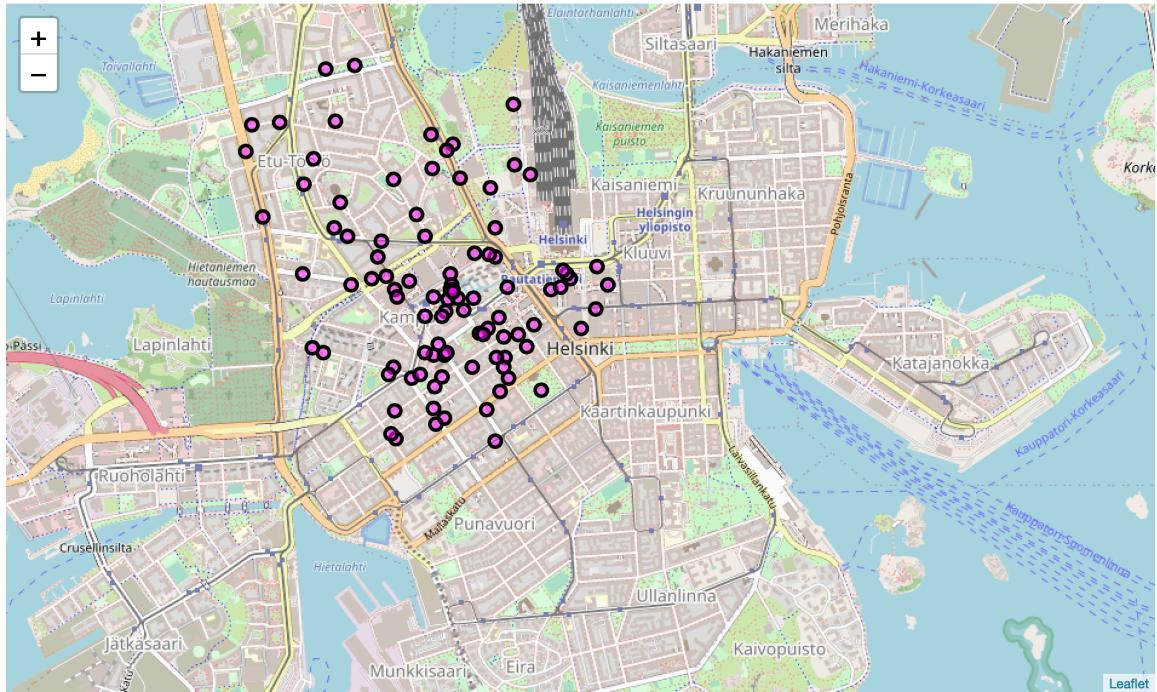
Then we filter and obtain a map for neighborhoods in Helsinki only.



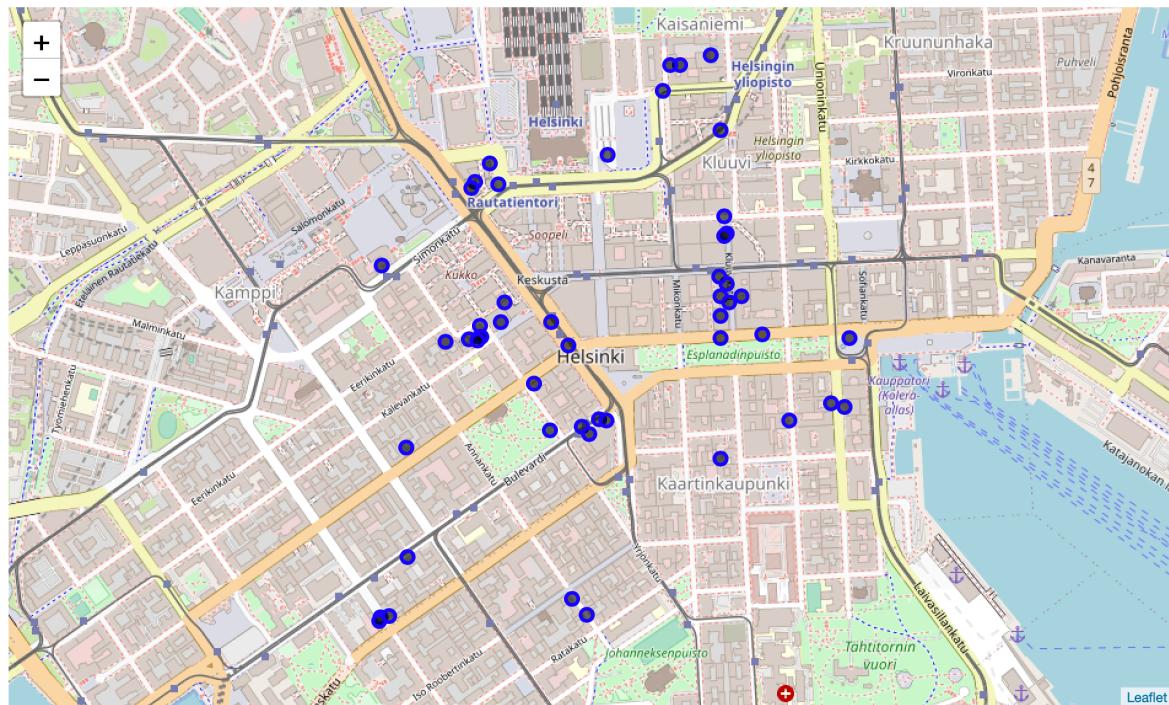
Next, we get a list of top 100 locations in Helsinki using FourSquare data. A part of the list is displayed here. We can see the categories of the locations here and use that to explore further.

	name	categories	lat	lng
0	Taidehalli	Art Gallery	60.172127	24.931014
1	Ateljé Finne	Scandinavian Restaurant	60.171198	24.928515
2	Baana	Road	60.169973	24.928837
3	Twisted Street Kitchen	Asian Restaurant	60.170641	24.928203
4	Pobre	Filipino Restaurant	60.169500	24.933484
5	Arkadia Oy International Bookshop	Bookstore	60.173369	24.929330
6	Ruohonjuuri	Health Food Store	60.170016	24.933404
7	Cafe Rouge	Middle Eastern Restaurant	60.168711	24.933027
8	Kiasma	Art Museum	60.171652	24.936537
9	Amos Rex	Art Museum	60.170643	24.936529
10	Luonnontieteellinen museo	Science Museum	60.171350	24.931549

A map of the locations is displayed below



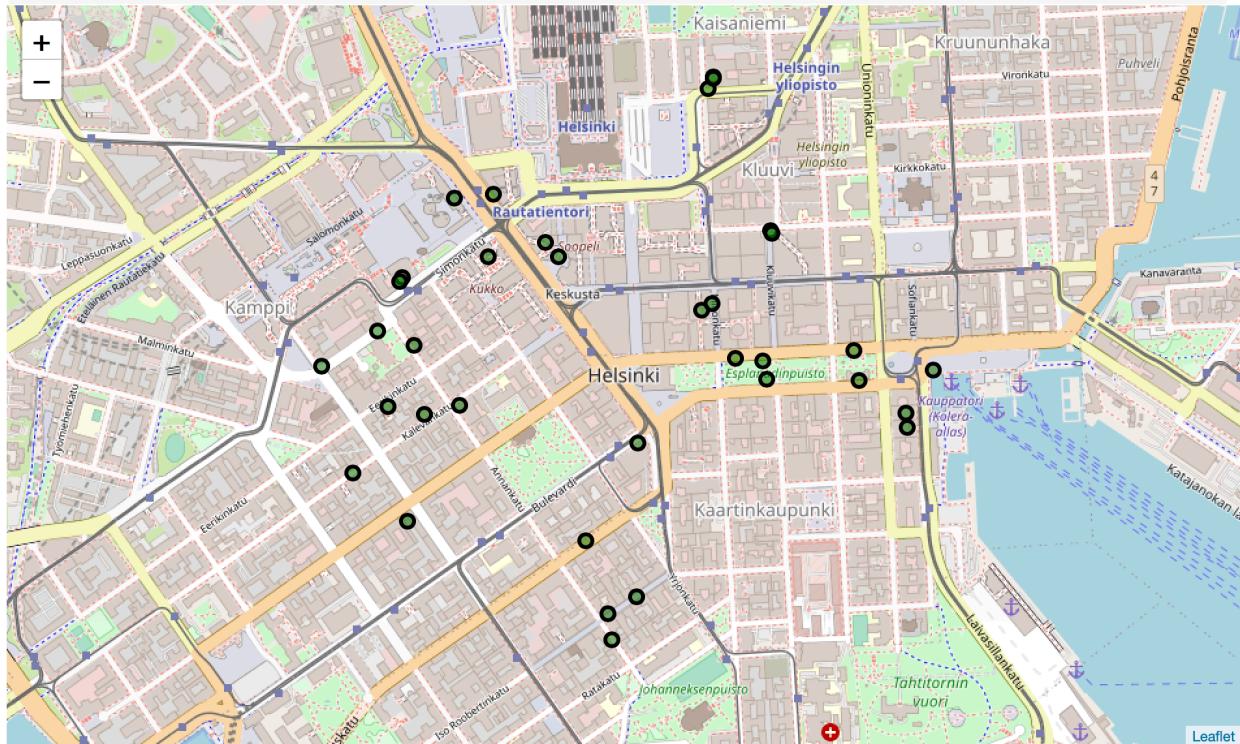
Next, a request for **Hotels** in a radius of 500 is sent and the results are obtained as follows



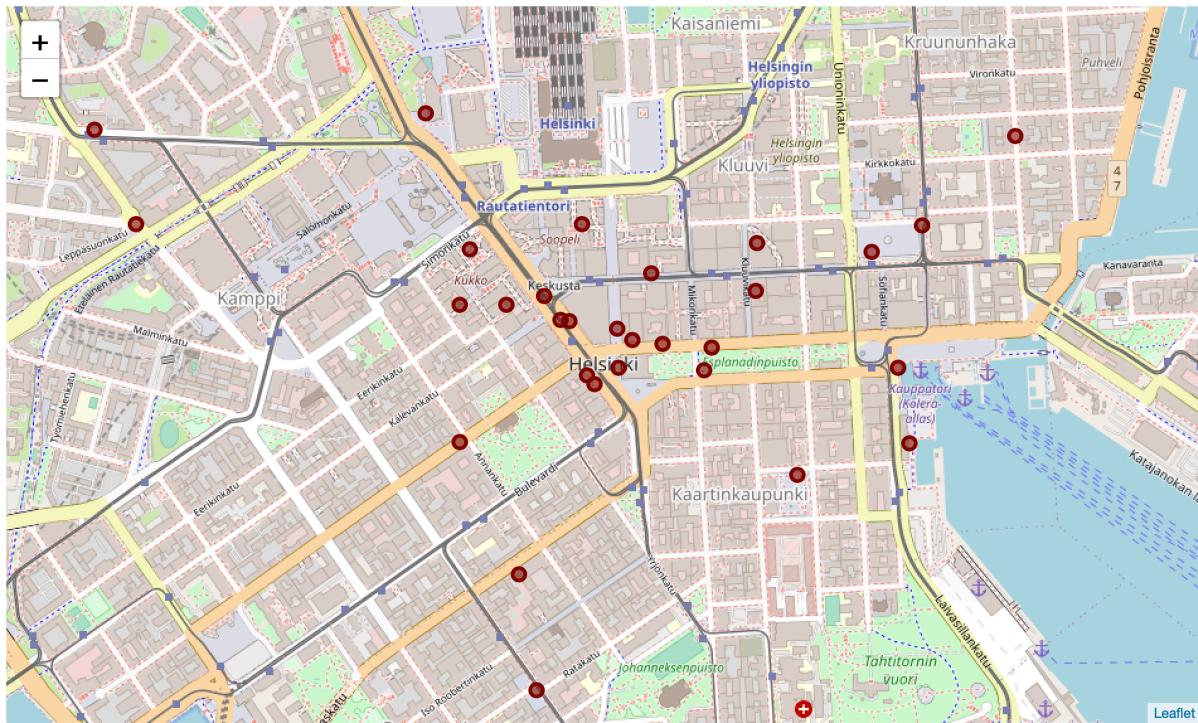
Next, **Restaurants** within radius of 500 is obtained.

A part of the list is shown below, it shows that different cuisines and types of restaurants are listed. A map showing the locations in the list is also displayed.

	name	categories	address	crossStreet	lat	lng	labeledLatLngs	distance	postalCode	cc	city	
0	The Restaurant	Breakfast Spot	Scandic Simonkatu	9	60.169019	24.935282	[{"label": "display", "lat": 60.16901935445988, "lng": 24.935282}	441	00100	FI	Helsinki	
1	Huacheng Restaurant	Chinese Restaurant	Forum		NaN	60.169352	24.938121	[{"label": "display", "lat": 60.169352070297, "lng": 24.938121}	328	00100	FI	Helsinki
2	Restaurant Kamp Signé	Restaurant	Pohjoisesplanadi 29		NaN	60.167638	24.947141	[{"label": "display", "lat": 60.16763846981376, "lng": 24.947141}	254	00100	FI	Helsinki
3	Restaurant day Laivurin letut	Snack Place	Sinebrykoffin puisto		NaN	60.167567	24.932599	[{"label": "display", "lat": 60.16756692843562, "lng": 24.932599}	552	NaN	FI	Helsinki
4	Restaurant Pidot	Diner		NaN	NaN	60.166787	24.951863	[{"label": "display", "lat": 60.166787, "lng": 24.951863}	518	NaN	FI	NaN
5	Restaurant Haven	Breakfast Spot		NaN	NaN	60.166550	24.951908	[{"label": "display", "lat": 60.16655, "lng": 24.951908}	525	00130	FI	Helsinki
6	Center-inn Restaurant	Other Nightlife		NaN	NaN	60.168473	24.945148	[{"label": "display", "lat": 60.168473, "lng": 24.945148}	185	NaN	FI	NaN
7	Michel Restaurant & Cocktail Bar	Modern European Restaurant	Mikonkatu 4		NaN	60.168582	24.945508	[{"label": "display", "lat": 60.16858182771182, "lng": 24.945508}	208	00100	FI	Helsinki
8	Nanglo Restaurant	Indian Restaurant		NaN	NaN	60.166780	24.936005	[{"label": "display", "lat": 60.16678, "lng": 24.936005}	370	00100	FI	Helsinki
9	Sokos Restaurant&Bar	Burger Joint		NaN	NaN	60.169781	24.947398	[{"label": "display", "lat": 60.169781248041, "lng": 24.947398}	375	NaN	FI	NaN
10	Point Restaurant & Bar	Buffet	Iso Roobertinkatu 10		NaN	60.163773	24.942982	[{"label": "display", "lat": 60.16377325632992, "lng": 24.942982}	405	00120	FI	Helsinki

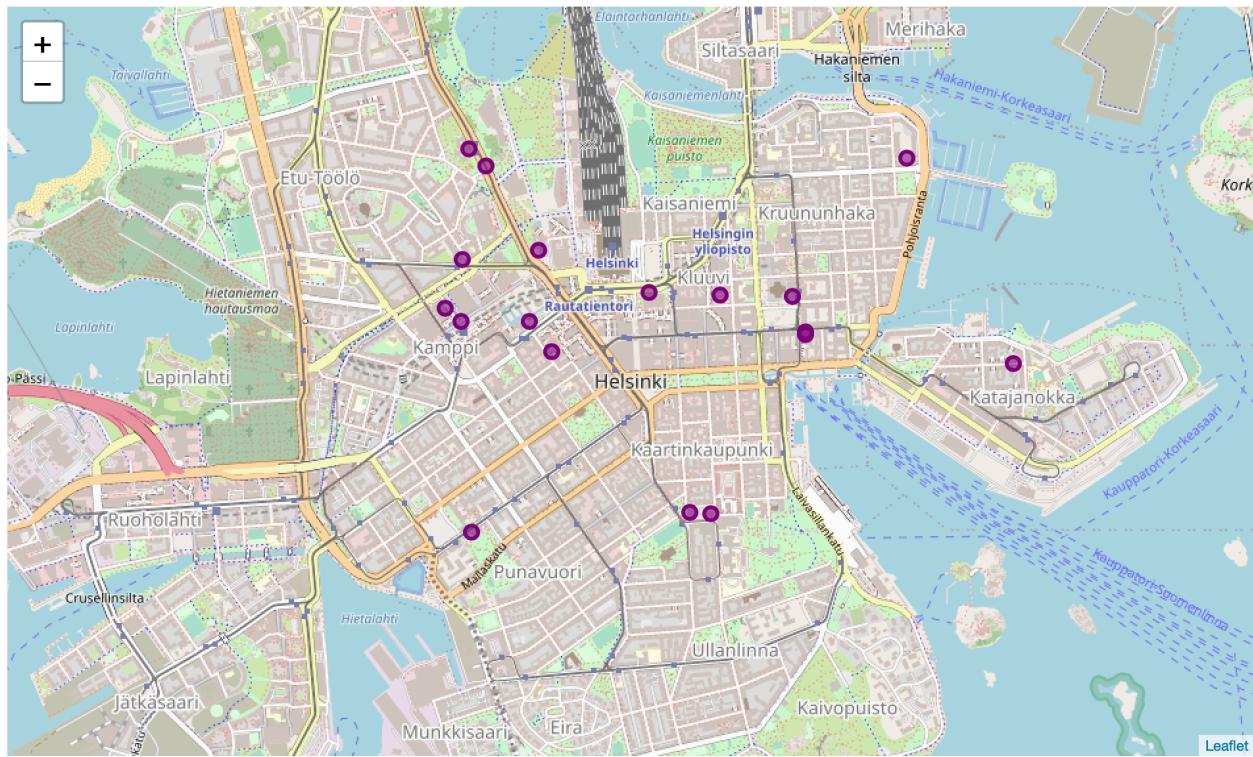


A list of **Cafes** is obtained and plotted on the map

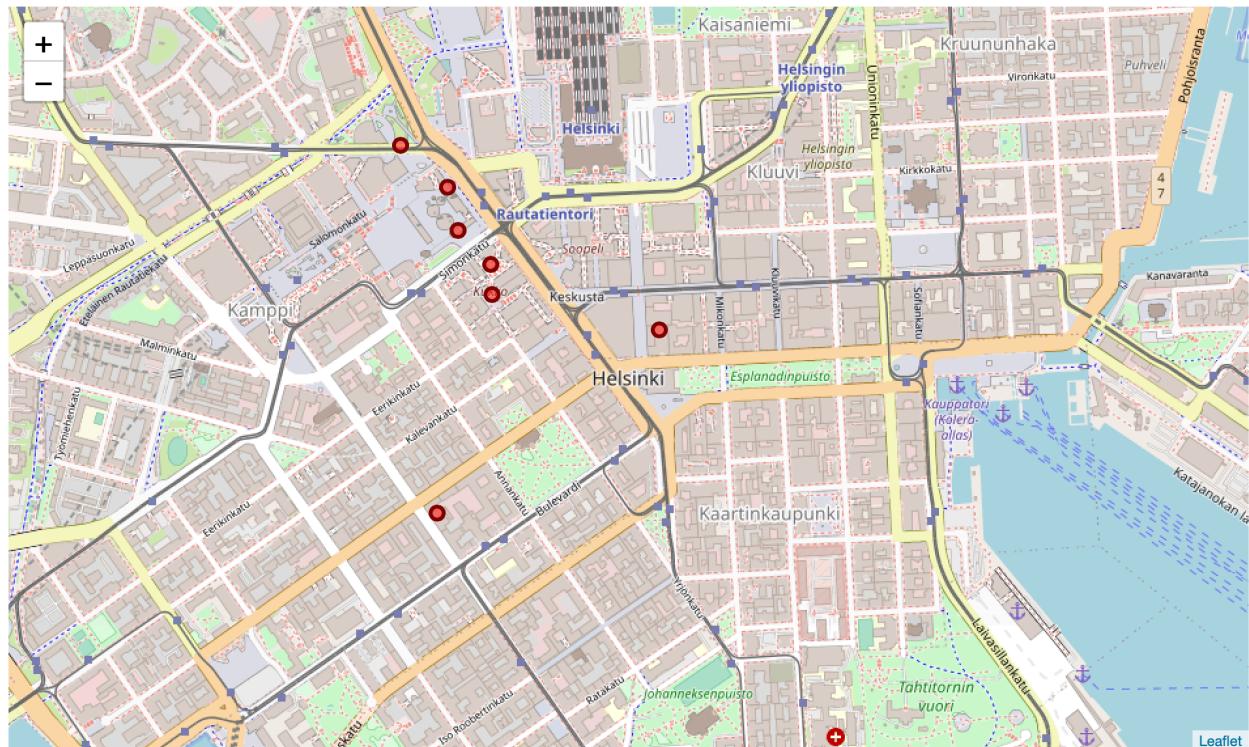


Among the places to visit, a list of **Museums** is obtained and the corresponding map. The top 10 results are shown below.

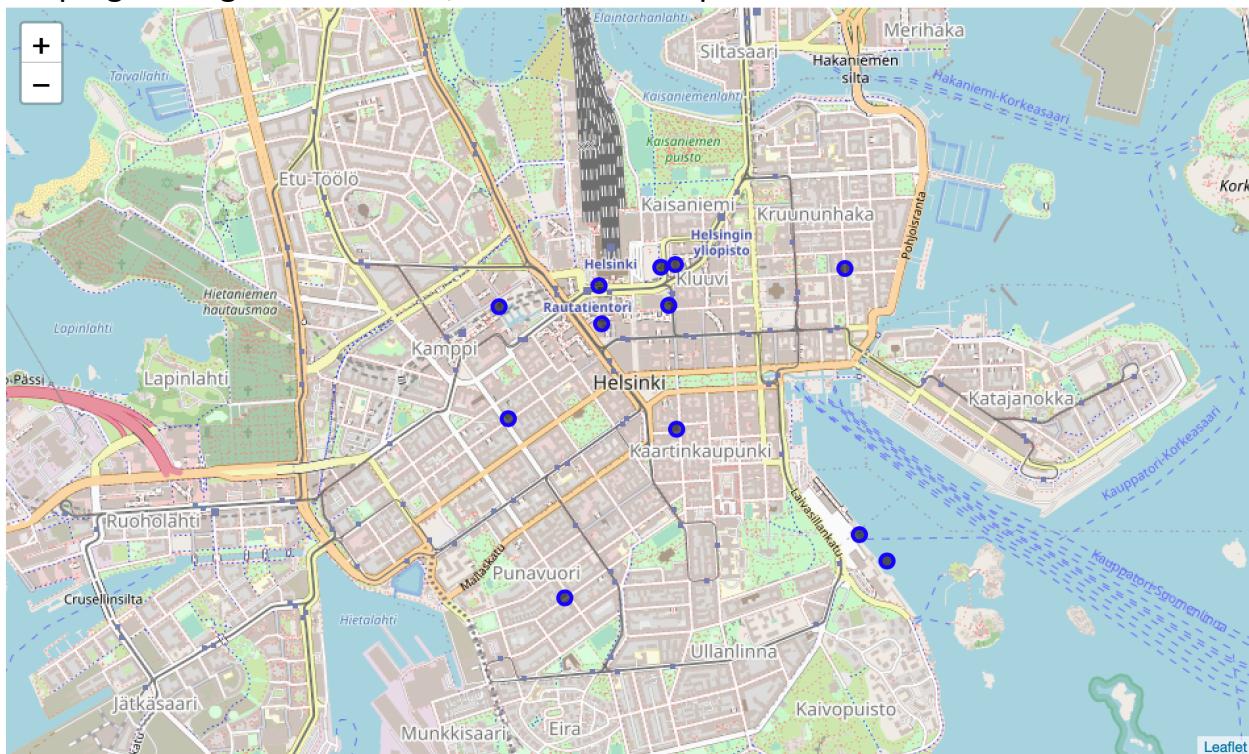
	name	categories	address	lat	lng	labeledLatLngs	distance	postalCode	cc	city	state	country
0	Sinebrychoffin Taide museo / Sinebrychoff Art Museum...	Art Museum	Bulevardi 40	60.162526	24.932166	[{"label": "display", "lat": 60.16252598185265...]	792	00120	FI	Helsinki	Uusimaa	Finland
1	Suomen arkkitehtuurimuseo (Museum of Finnish Architecture)	Art Museum	Kasarmikatu 24	60.163133	24.947763	[{"label": "display", "lat": 60.16313278071235...]	556	00130	FI	Helsinki	Uusimaa	Finland
2	Helsingin kaupunginmuseo / Helsinki City Museum...	History Museum	Sederholmin talo	60.168996	24.954028	[{"label": "display", "lat": 60.168996, "lng": ...}]	658	00170	FI	Helsinki	Uusimaa	Finland
3	Sotamuseo Military museum	History Museum	Liisankatu 1	60.174661	24.960552	[{"label": "display", "lat": 60.17466110631173...}]	1281	00170	FI	Helsinki	Uusimaa	Finland
4	Museum of broken relationships	Art Museum	Aleksanterinkatu 16	60.168919	24.953990	[{"label": "display", "lat": 60.16891865697694...}]	653	Nan	FI	Helsinki	Uusimaa	Finland
5	Design Museum Sun Terrace	None	Korkeavuorenkatu	60.169371	24.935975	[{"label": "display", "lat": 60.1693709888402...}]	425	Nan	FI	Nan	Nan	Finland
6	helsinki art museum	Art Museum	NaN	60.169342	24.931468	[{"label": "display", "lat": 60.169342, "lng": ...}]	651	Nan	FI	Nan	Nan	Finland
7	Teddy Bear Museum	Museum	NaN	60.167995	24.967583	[{"label": "display", "lat": 60.167995, "lng": ...}]	1386	Nan	FI	Nan	Nan	Finland
8	Ateneum	Art Museum	Kaivokatu 2	60.170302	24.943788	[{"label": "display", "lat": 60.17030164536989...}]	328	00100	FI	Helsinki	Uusimaa	Finland
9	Kiasma	Art Museum	Mannerheimintie 2	60.171652	24.936537	[{"label": "display", "lat": 60.17165167467719...}]	578	00100	FI	Helsinki	Uusimaa	Finland
10	Desigmuseo	Art Museum	Korkeavuorenkatu 23	60.163145	24.946401	[{"label": "display", "lat": 60.16314485405816...}]	519	00130	FI	Helsinki	Uusimaa	Finland



As mentioned before, a list of **Gift Shops** to help the tourists' needs is provided.



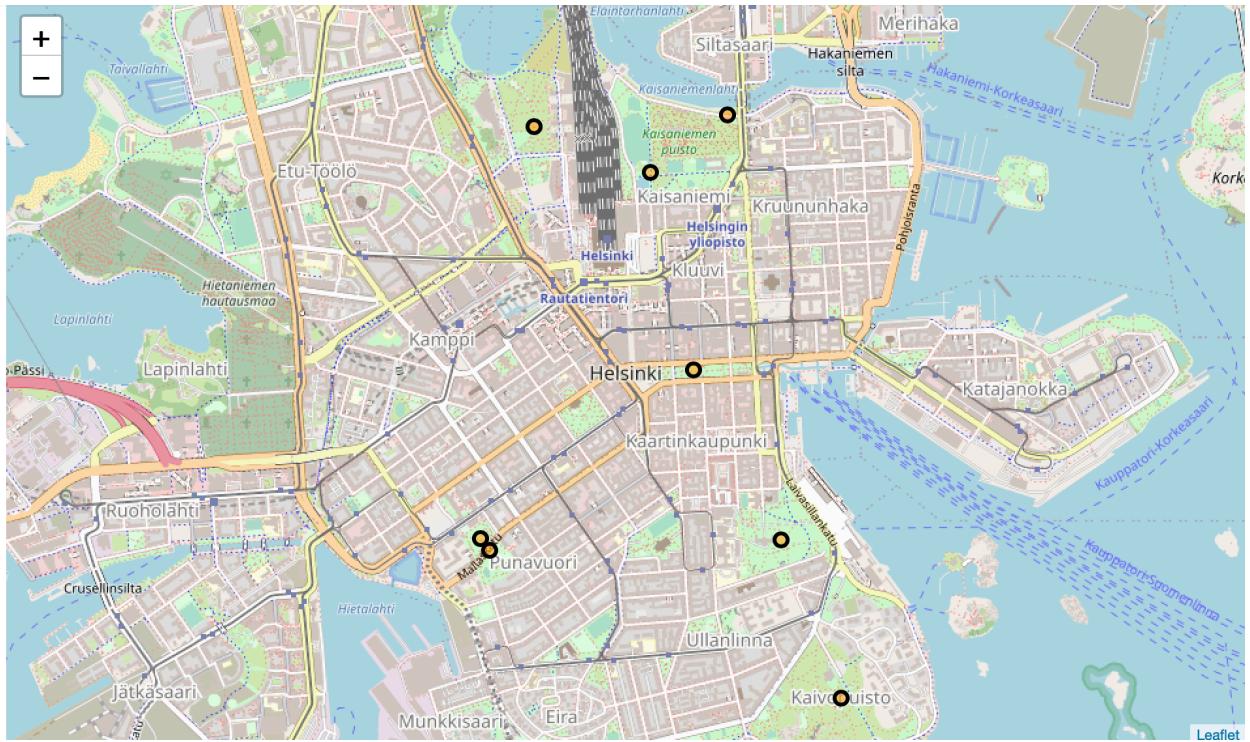
Keeping the night life in mind, a list of **Pubs** is provided.



Another important location is **Parks** from where Northern Lights are visible. The list of Parks is displayed along with the map.

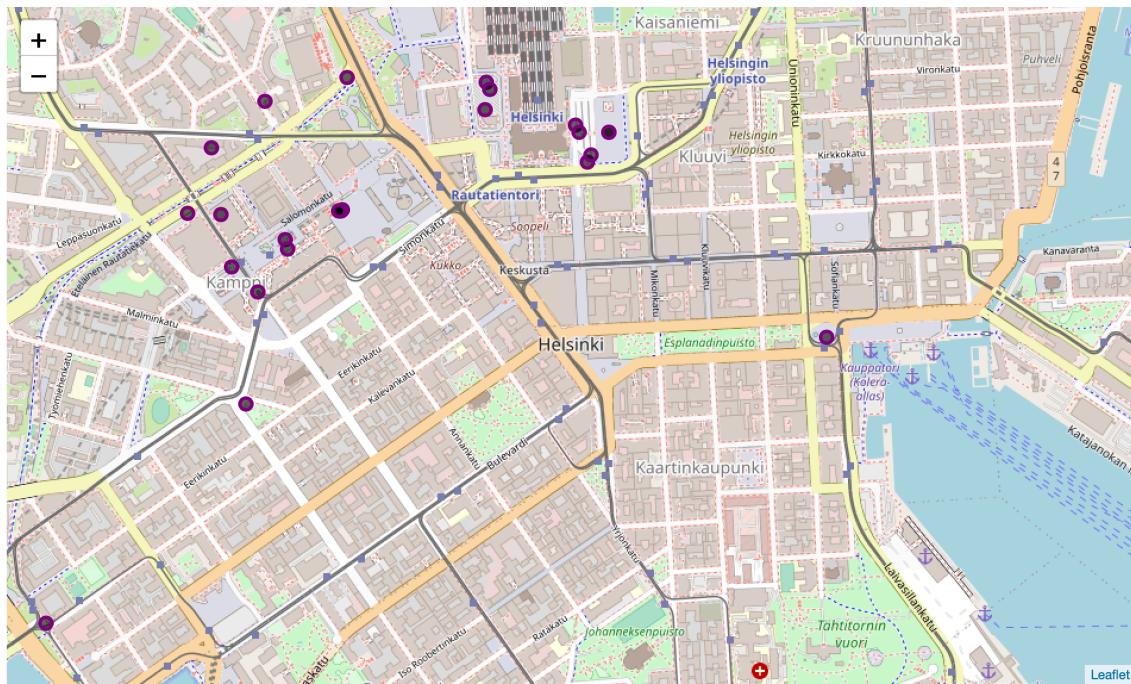
name	categories	address	crossStreet	lat	lng	labeledLatLngs	distance	postalCode	cc	city	stat	
Esplanadin puisto	Park	Eteläesplanadi	Pohjoisesplanadi	60.167498	24.947035	[[{"label": "display", "lat": 60.167498, "lng": 24.947035}]]	NaN	247	00100	FI	Helsinki	Uusima
Fanny Park	Park	Nan	Nan	60.162028	24.933010	[[{"label": "display", "lat": 60.162028, "lng": 24.93301}]]	799	Nan	FI	Nan	Nal	
Kristuskyrkans Park	Park	Nan	Nan	60.175857	24.949225	[[{"label": "display", "lat": 60.17585732845229, "lng": 24.949225}]]	1009	Nan	FI	Nan	Nal	
Sinebrychoffin puisto	Park	Bulevardi 40	Nan	60.161625	24.933676	[[{"label": "display", "lat": 60.16162517793622, "lng": 24.933676}]]	810	00180	FI	Helsinki	Uusima	
Tähtitorinmäki	Park	Tähtitorinkatu	Unioninkatu	60.161977	24.952762	[[{"label": "display", "lat": 60.16197749636095, "lng": 24.952762}]]	826	00140	FI	Helsinki	Uusima	
Kaivopuisto / Brunnsparken (Kaivopuisto)	Park	Nan	Nan	60.156810	24.956732	[[{"label": "display", "lat": 60.15680978091396, "lng": 24.956732}]]	1416	00140	FI	Helsinki	Uusima	
Kaisaniemen puisto	Park	Kaisaniemi	Unioninkatu	60.173984	24.944164	[[{"label": "display", "lat": 60.17398389674315, "lng": 24.944164}]]	737	00100	FI	Helsinki	Uusima	
Finlandiapuisto	Park	Karamzininkatu 2	Nan	60.175458	24.936581	[[{"label": "display", "lat": 60.175458, "lng": 24.936581}]]	955	Nan	FI	Helsinki	Uusima	

Map of Parks in the neighborhood:

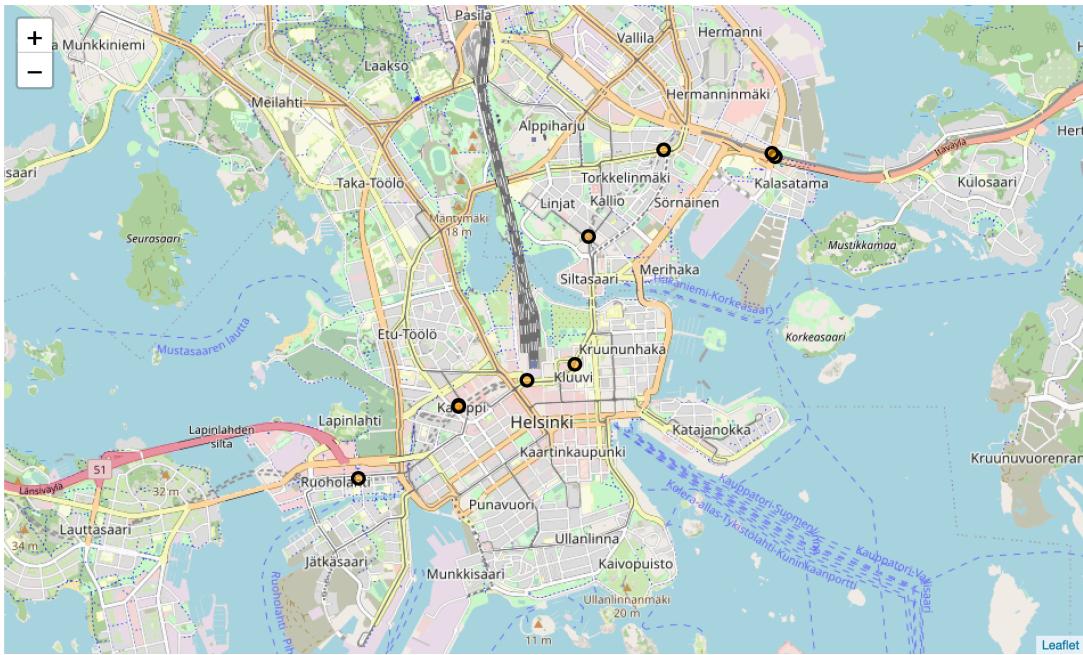


Next, we provide the transport facilities available.

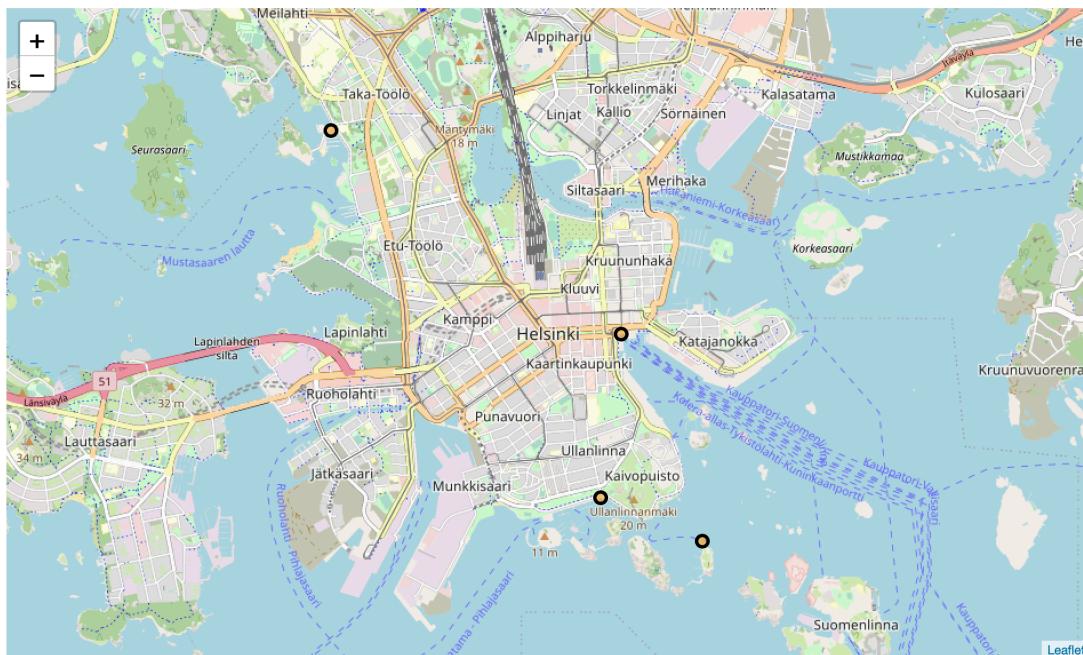
First the Bus lines:



Metro Line:

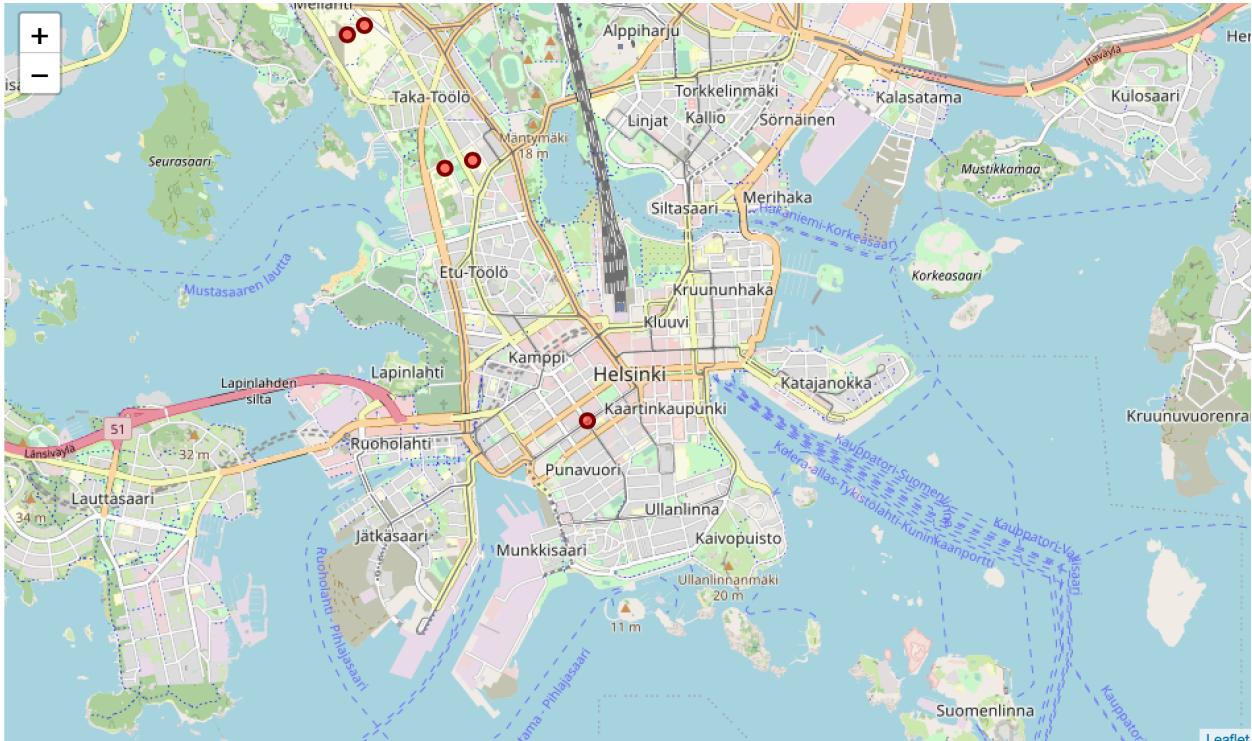


Boat/Ferry ride:

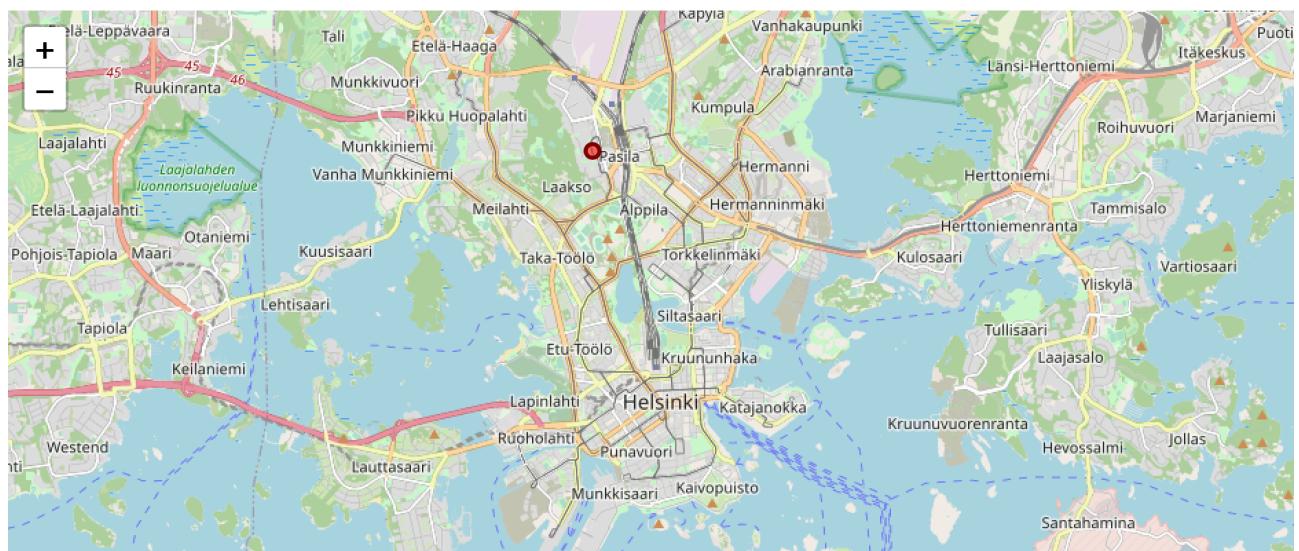


Finally, a list of emergency services and information centers is provided

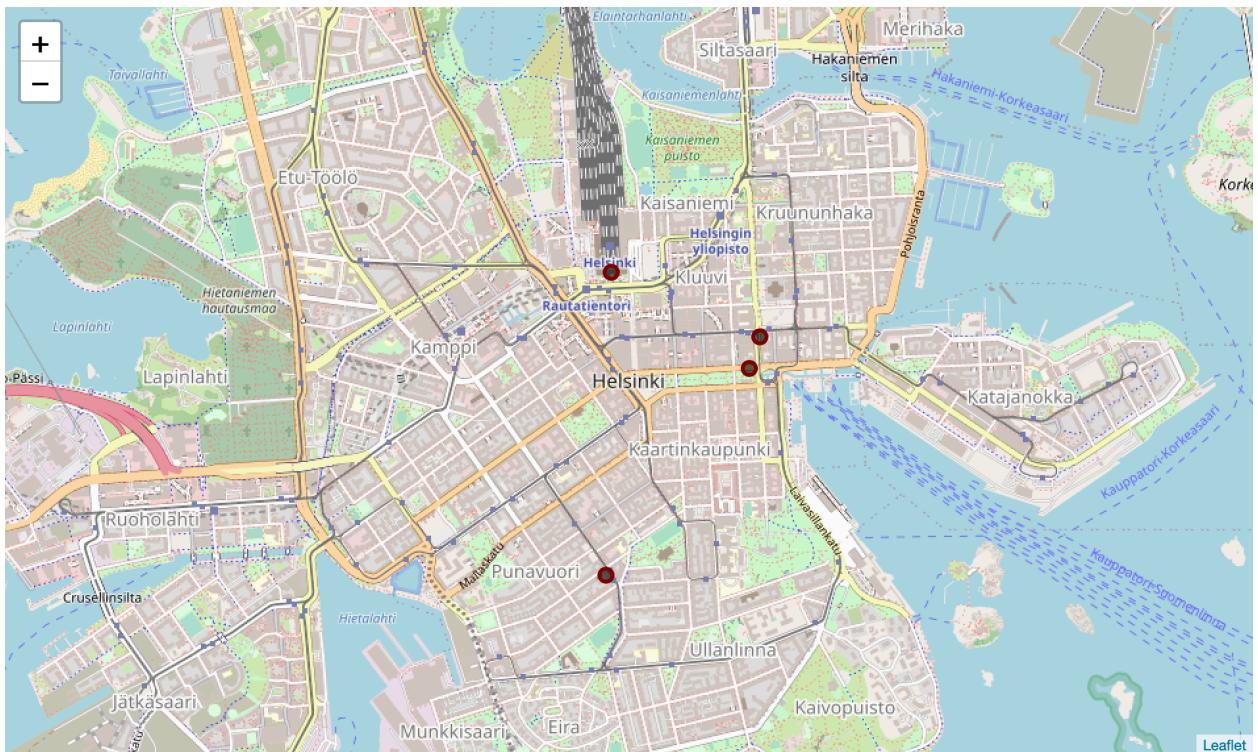
Hospitals:



Police Department:



Tourist Information Centre:



Hence, we have provided the required information needed to explore the neighborhood from a tourist and travel agency point of view.

Discussion

We can see from the results that a list of necessities when traveling to a new city is obtained. This can be used to make travel plans easily.

An improvement to this problem can be to make use of the ratings of locations provided by Foursquare in order to obtain ratings of hotels, restaurants, etc. so that the tourists can choose based on their preferences and budgets.

Also, restaurants and cafes nearby a particular hotel can be obtained so that distance traveled is minimized.

Conclusion

Hence the solution is provided to the given problem of the travel agency and can help their expansion in Helsinki. This data can be used to make favorable itineraries and can make travel easier.