

What's the best place to open a CrossFit gym?

Joana Chong
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➤ Problem:

- Cardiovascular diseases are dangerously increasing

➤ Solution:

- Diet and exercise -> Open a gym

➤ Stakeholders:

- Gym company, someone interested in opening a CrossFit gym (athlete, entrepreneur).

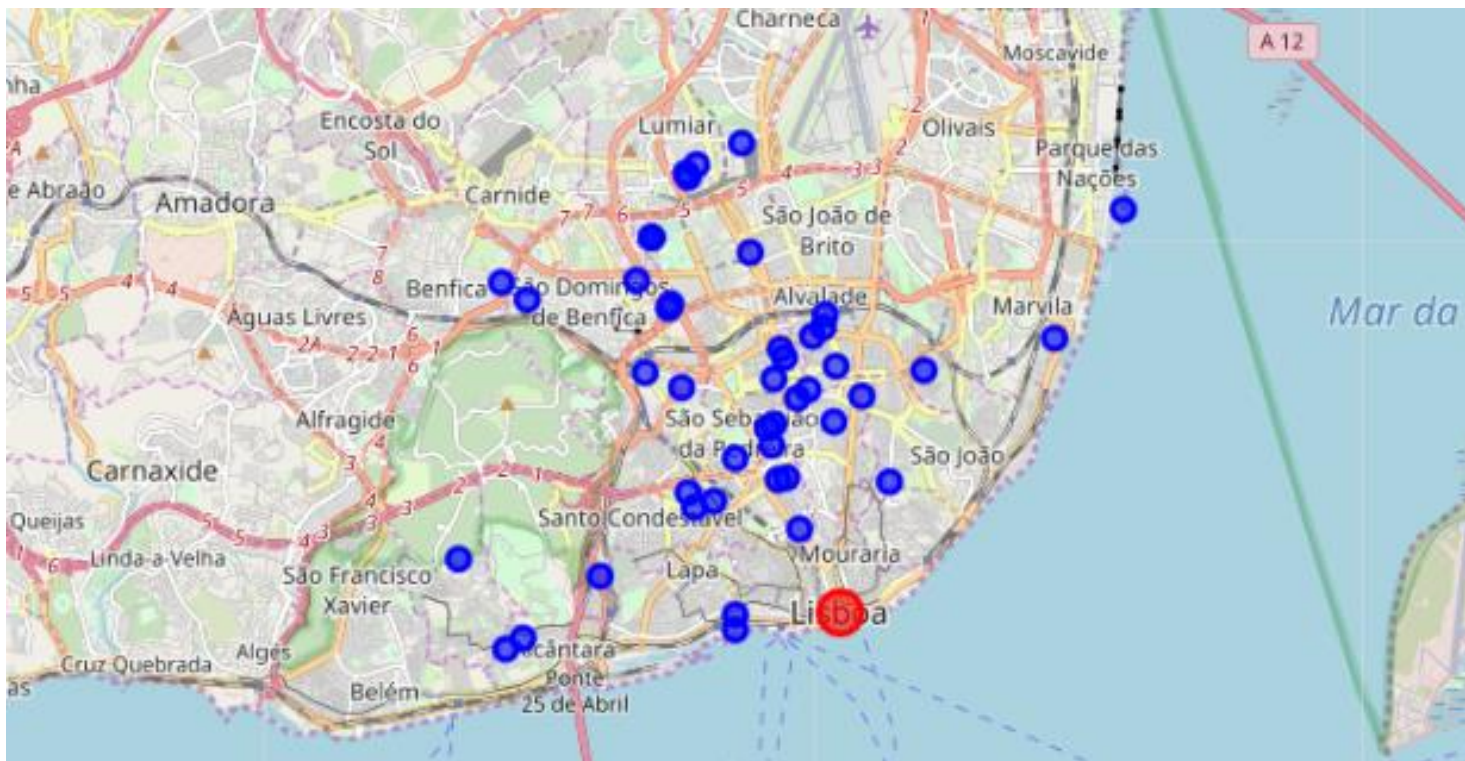
➤ Goal:

- Find a place without gyms nearby, with venues nearby and close to city centre.

Data acquisition and cleaning

- **Foursquare API:**
 - Finding the number of CrossFit gyms/health centres
 - Determine the venues nearby
 - Find a location with the highest number of venues
- **geopy.geocoders :**
 - Convert the addresses into latitude and longitude values and vice-versa.
- In total 504 gyms were retrieved.
- Only the 'Postalcode', 'Name', 'Latitude', 'Longitude' and 'Distance' columns were considered.
- No missing values or heterogeneities were found.

Gyms in a 6000m radius from city centre



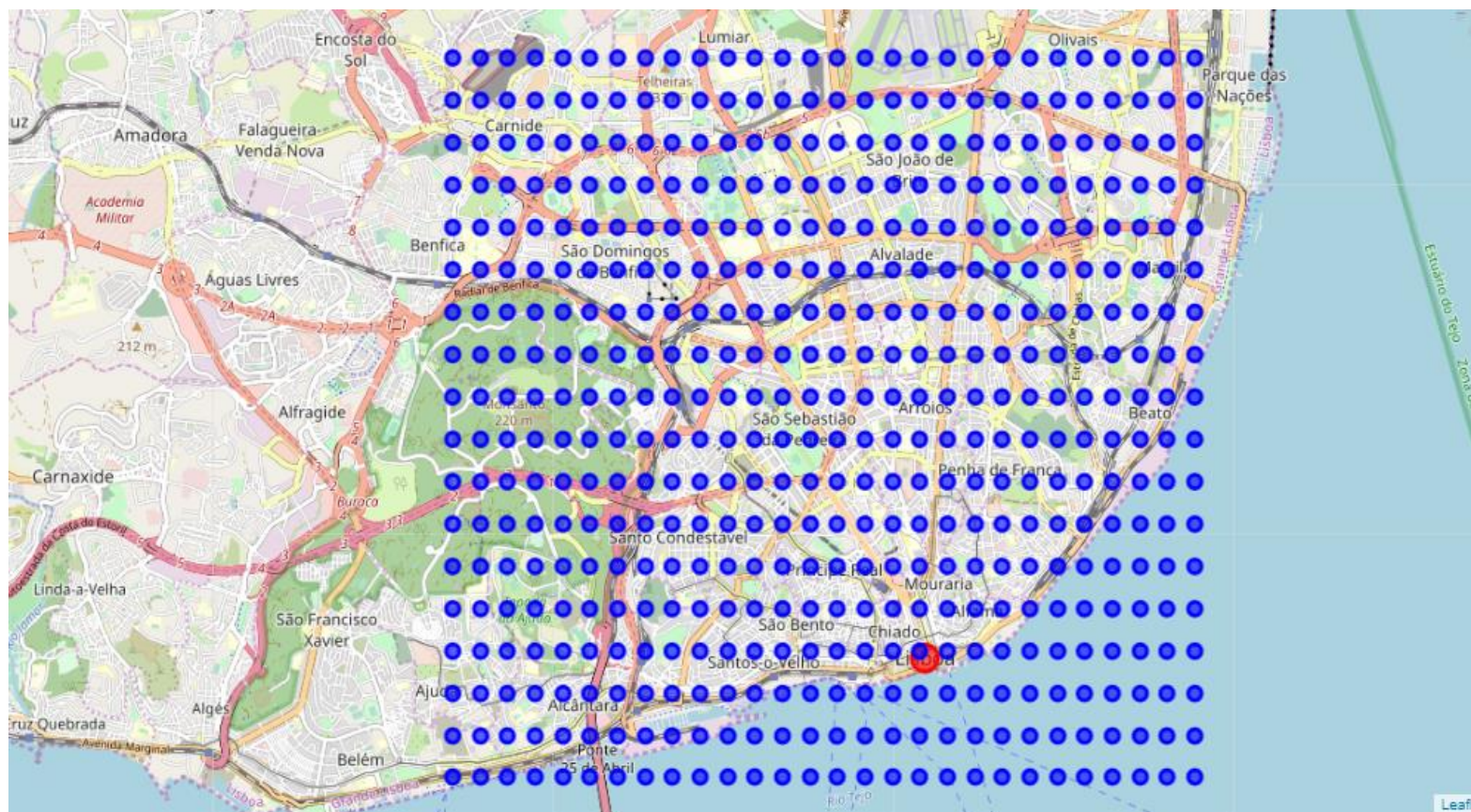
Blue – Existing gyms

Red – Lisbon city centre

Top 5 venues nearby:

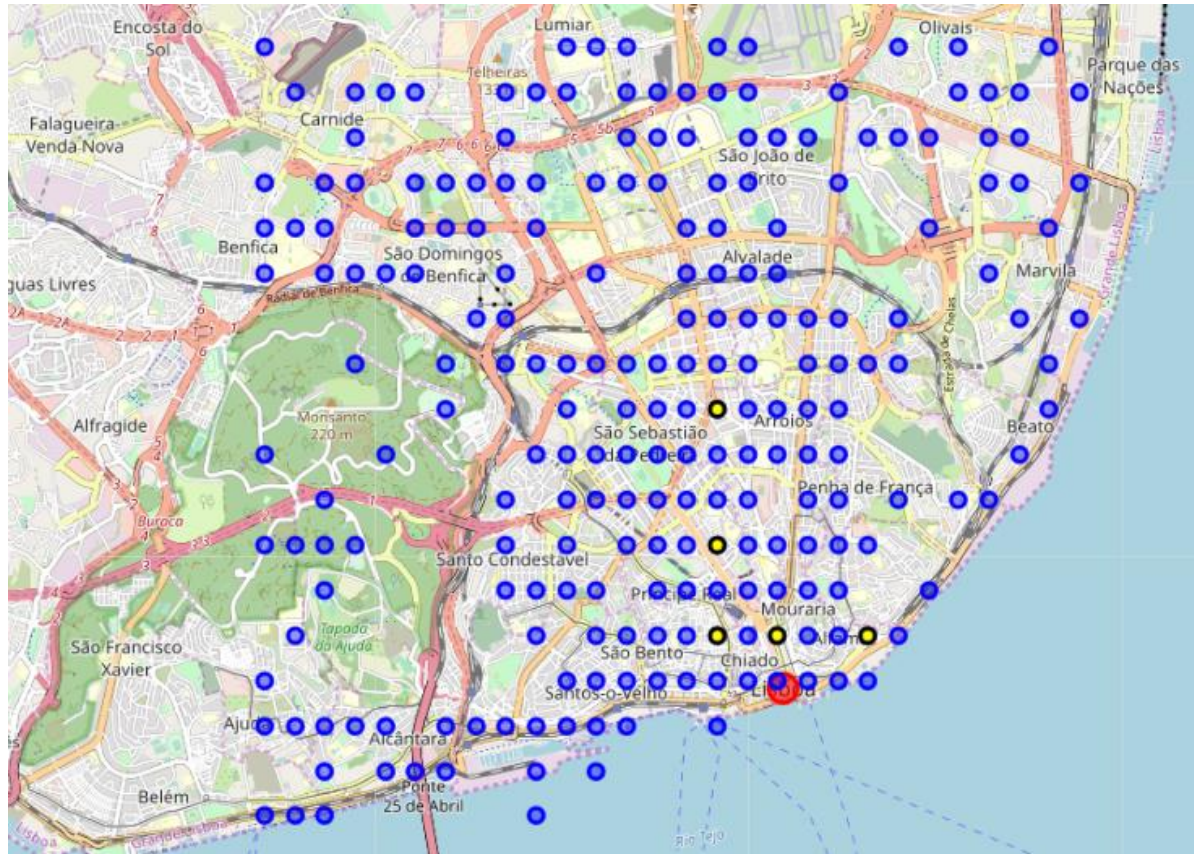
	Venue	Count
39	Restaurant	51.0
51	Train Station	23.0
20	Historic Site	20.0
14	Furniture / Home Store	19.0
9	Café	13.0

Region of interest (ROI) of potential addresses



Total: 504 pairs of coordinates

Map of locations with at least 1 venue nearby



Top 5 places with more venues nearby:

	Place	Place Latitude	Place Longitude	Venues Count
0	127	38.712607	-9.144393	19
1	267	38.733327	-9.144393	18
2	129	38.712607	-9.137299	13
3	132	38.712607	-9.126658	13
4	183	38.720895	-9.144393	13

Blue – Existing gyms Red – Lisbon city centre
Yellow – Top 5 locations with more venues

Number of gyms ($r = 150\text{m}$) and distance to the city centre



Address	No. Gyms	Distance to city centre	No. Venues
Bairro Alto, Misericórdia, Lisboa, 1200-050	0	866 m	19
Atrium Saldanha, Saldanha, Lisboa, 1050-094	2	2924 m	18
Rua de Santa Justa, Baixa, Lisboa, 1100-052	1	544 m	13
Rua de Santo Estêvão, Alfama, Lisboa, 1100-615	2	1017 m	13
Rua de Santa Marta, Santo António, Lisboa, 1150-255	0	1611 m	13

Conclusion

- The best location to open a CrossFit gym is **Bairro Alto** because:
 - It has the highest number of venues nearby (venues = 19)
 - It is the 2nd closest to city center (866m)
 - It doesn't have any gym/CrossFit gym nearby.
- **Future developments:**
 - From all the venues retrieved, find the most relevant ones.
 - Create a ROI more 'appropriate', perhaps considering cartesian coordinates and making each location 100m apart.