

RESTAURANTS IN LISBON

WHAT WOULD BE THE BEST PLACE TO
OPEN UP A RESTAURANT?



INTRODUCTION

- What would be the best place to open up a restaurant, in Lisbon?
- This can be a difficult question, since it may depend on so many factors like popularity of the cuisine, place, geographic location, tourism, rent etc.
- For this study the only factors that will be considered are the population, competition and variety of cuisines for each county of Lisbon.
- The data will lay on the foursquare API content, that may not be updated. Also, Lourinhã was excluded from this work as there was 0 registered restaurants there.
- Counties will be clustered, based on their most common venues.

DATA SOURCE

- Latitude and longitude values for each county in Portugal

<https://simplemaps.com/data/pt-cities>

- Population per county of Lisbon (data from 2018)

https://pt.wikipedia.org/wiki/Lista_de_munic%C3%ADpios_de_Portugal_por_popula%C3%A7%C3%A3o

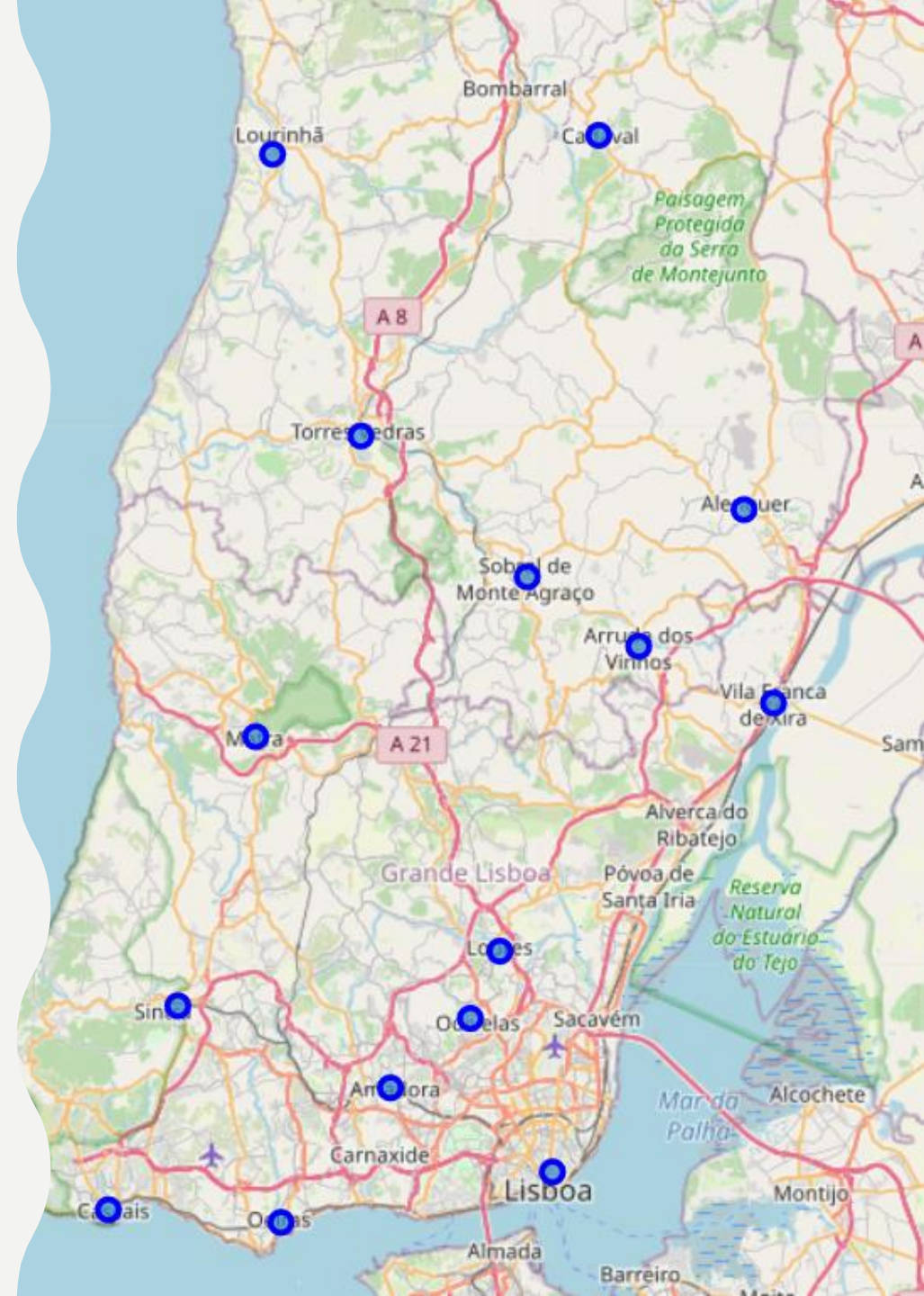
	city	lat	lng	country	iso2	admin
1	Lisbon	38.716667	-9.133333	Portugal	PT	Lisboa
2	Picotos	41.192402	-8.619816	Portugal	PT	Porto
3	Braga	41.550323	-8.420052	Portugal	PT	Braga
4	Funchal	32.633333	-16.9	Portugal	PT	Madeira
5	Setúbal	38.533333	-8.9	Portugal	PT	Setúbal
6	Copeira	40.176915	-8.424018	Portugal	PT	Coimbra
7	Ponta Delgada	37.733333	-25.666667	Portugal	PT	Azores
8	Portimão	37.136636	-8.539796	Portugal	PT	Faro
9	Évora	38.566667	-7.9	Portugal	PT	Évora
10	Aveiro	40.644269	-8.645535	Portugal	PT	Aveiro
11	Leiria	39.747724	-8.804995	Portugal	PT	Leiria
12	Faro	37.019367	-7.932229	Portugal	PT	Faro
13	Beja	38.015064	-7.863227	Portugal	PT	Beja

	City	Population
1	Lisbon	507220
2	Sobral de Monte Agraço	10490
3	Mafra	84008
4	Amadora	181724
5	Lourinhã	25670
6	Sintra	388434
7	Oeiras	176218
8	Torres Vedras	78220
9	Azambuja	22445
10	Alenquer	43596
11	Cascais	212474
12	Odivelas	159602
13	Arruda dos Vinhos	15082
14	Vila Franca de Xira	141603
15	Cadaval	13627
16	Loures	211359

COUNTIES OF LISBON

- The dataset was cleaned to only the counties of Lisbon
- Was drawn a map with each county marked

	City	Latitude	Longitude
0	Lisbon	38.716667	-9.133333
1	Sobral de Monte Agraço	39.019579	-9.150809
2	Mafra	38.937933	-9.327565
3	Amadora	38.759711	-9.239708
4	Lourinhã	39.233333	-9.316667
5	Sintra	38.800971	-9.378257
6	Oeiras	38.691049	-9.310847
7	Torres Vedras	39.091089	-9.258602
8	Azambuja	39.070290	-8.868220
9	Alenquer	39.053151	-9.009282
10	Cascais	38.697450	-9.423141
11	Odivelas	38.795234	-9.187387
12	Arruda dos Vinhos	38.984106	-9.077463
13	Vila Franca de Xira	38.955249	-8.989660
14	Cadaval	39.242977	-9.103271
15	Loures	38.829082	-9.168106



FOURSQUARE API

- Were obtained the most common restaurant categories, along with their lat. and long. values, for each county within a 500 meter radius

	City	City Latitude	City Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
3	Lisbon	38.716667	-9.133333	The Food Temple	38.715881	-9.134385	Vegetarian / Vegan Restaurant
5	Lisbon	38.716667	-9.133333	Zé da Mouraria	38.716170	-9.134833	Portuguese Restaurant
12	Lisbon	38.716667	-9.133333	Chinês Clandestino	38.717378	-9.134961	Chinese Restaurant
16	Lisbon	38.716667	-9.133333	Maria da Mouraria	38.716218	-9.134614	Portuguese Restaurant
22	Lisbon	38.716667	-9.133333	Trigueirinho	38.713900	-9.135771	Portuguese Restaurant

MOST FREQUENT CUISINES FOR EACH COUNTY

---- Alenquer ----

	Venue	Freq.
0	Modern European Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Amadora ----

	Venue	Freq.
0	Portuguese Restaurant	0.50
1	Fast Food Restaurant	0.25
2	Tapas Restaurant	0.12
3	Sushi Restaurant	0.12
4	African Restaurant	0.00

---- Arruda dos Vinhos ----

	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Azambuja ----

	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Cadaval ----

	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Cascais ----

	Venue	Freq.
0	Portuguese Restaurant	0.33
1	Indian Restaurant	0.19
2	Sushi Restaurant	0.14
3	Tapas Restaurant	0.10
4	Seafood Restaurant	0.10

---- Lisbon ----

	Venue	Freq.
0	Portuguese Restaurant	0.38
1	Indian Restaurant	0.21
2	Vegetarian / Vegan Restaurant	0.08
3	Chinese Restaurant	0.08
4	African Restaurant	0.04

---- Loures ----

	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Mafra ----

	Venue	Freq.
0	Portuguese Restaurant	0.83
1	Sushi Restaurant	0.17
2	African Restaurant	0.00
3	Mediterranean Restaurant	0.00
4	Vegetarian / Vegan Restaurant	0.00

---- Odivelas ----

	Venue	Freq.
0	Portuguese Restaurant	0.6
1	Seafood Restaurant	0.2
2	Italian Restaurant	0.2
3	African Restaurant	0.0
4	Mediterranean Restaurant	0.0

---- Oeiras ----

	Venue	Freq.
0	Portuguese Restaurant	0.44
1	Sushi Restaurant	0.22
2	Asian Restaurant	0.22
3	Seafood Restaurant	0.11
4	African Restaurant	0.00

---- Sintra ----

	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Sobral de Monte Agraço ----

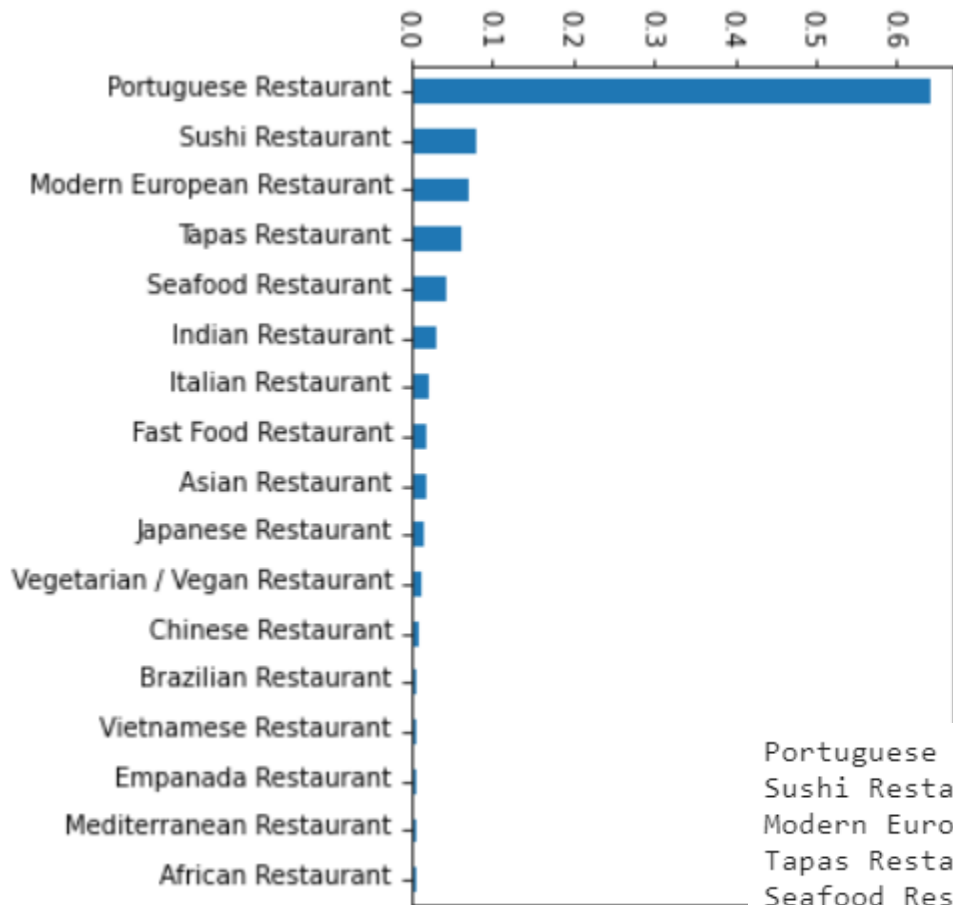
	Venue	Freq.
0	Portuguese Restaurant	1.0
1	African Restaurant	0.0
2	Mediterranean Restaurant	0.0
3	Vegetarian / Vegan Restaurant	0.0
4	Tapas Restaurant	0.0

---- Torres Vedras ----

	Venue	Freq.
0	Tapas Restaurant	0.67
1	Sushi Restaurant	0.33
2	African Restaurant	0.00
3	Mediterranean Restaurant	0.00
4	Vegetarian / Vegan Restaurant	0.00

---- Vila Franca de Xira ----

	Venue	Freq.
0	Portuguese Restaurant	0.50
1	Japanese Restaurant	0.17
2	Sushi Restaurant	0.17
3	Seafood Restaurant	0.17
4	Mediterranean Restaurant	0.00



Portuguese Restaurant	0.639074
Sushi Restaurant	0.077116
Modern European Restaurant	0.066667
Tapas Restaurant	0.059127
Seafood Restaurant	0.040979
Indian Restaurant	0.026587
Italian Restaurant	0.019683
Fast Food Restaurant	0.016667
Asian Restaurant	0.014815
Japanese Restaurant	0.011111
Vegetarian / Vegan Restaurant	0.008730
Chinese Restaurant	0.005556
Brazilian Restaurant	0.002778
Vietnamese Restaurant	0.002778
Empanada Restaurant	0.002778
Mediterranean Restaurant	0.002778
African Restaurant	0.002778



TOP CUISINES

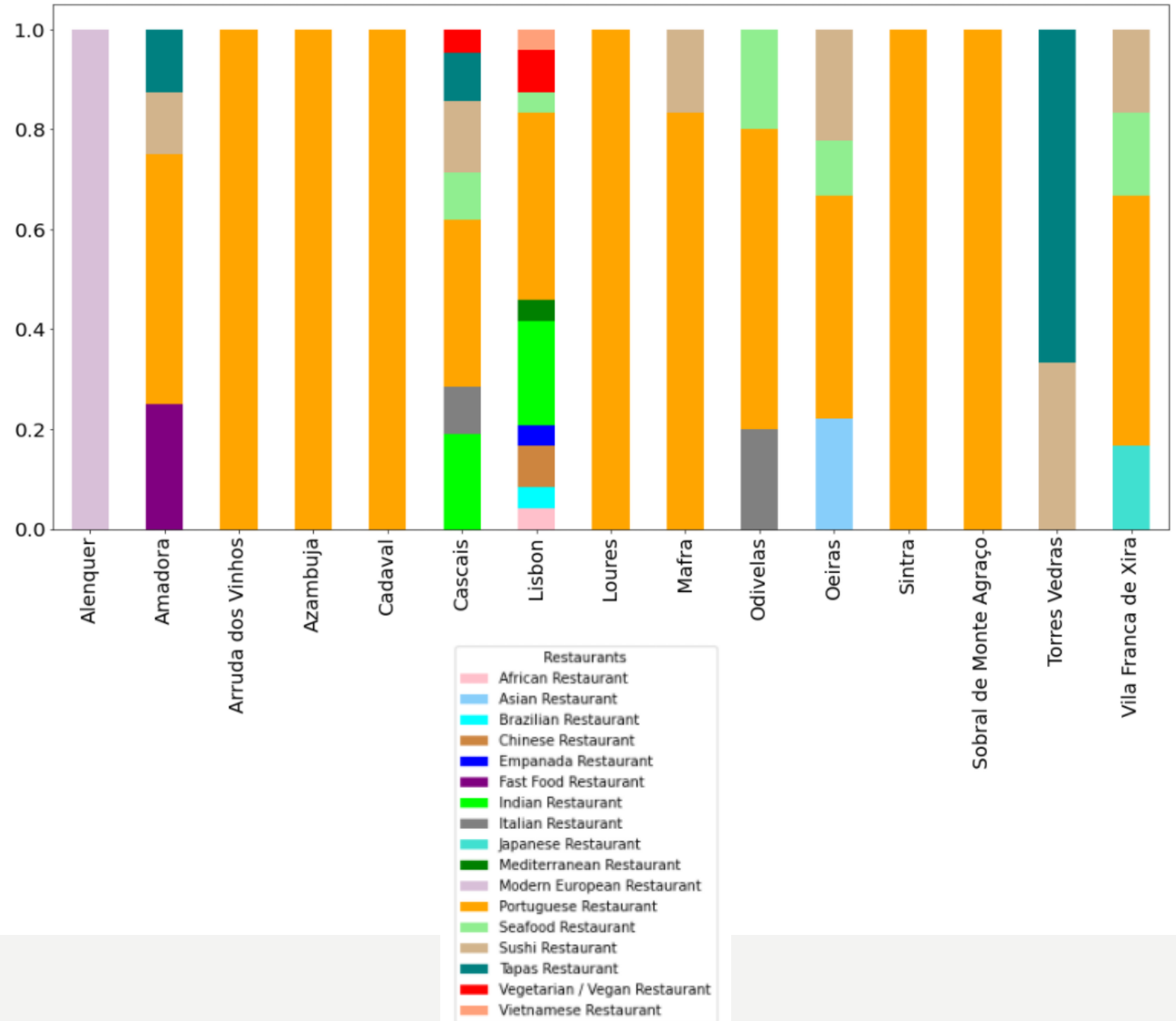
The map represents the restaurants density, for each county

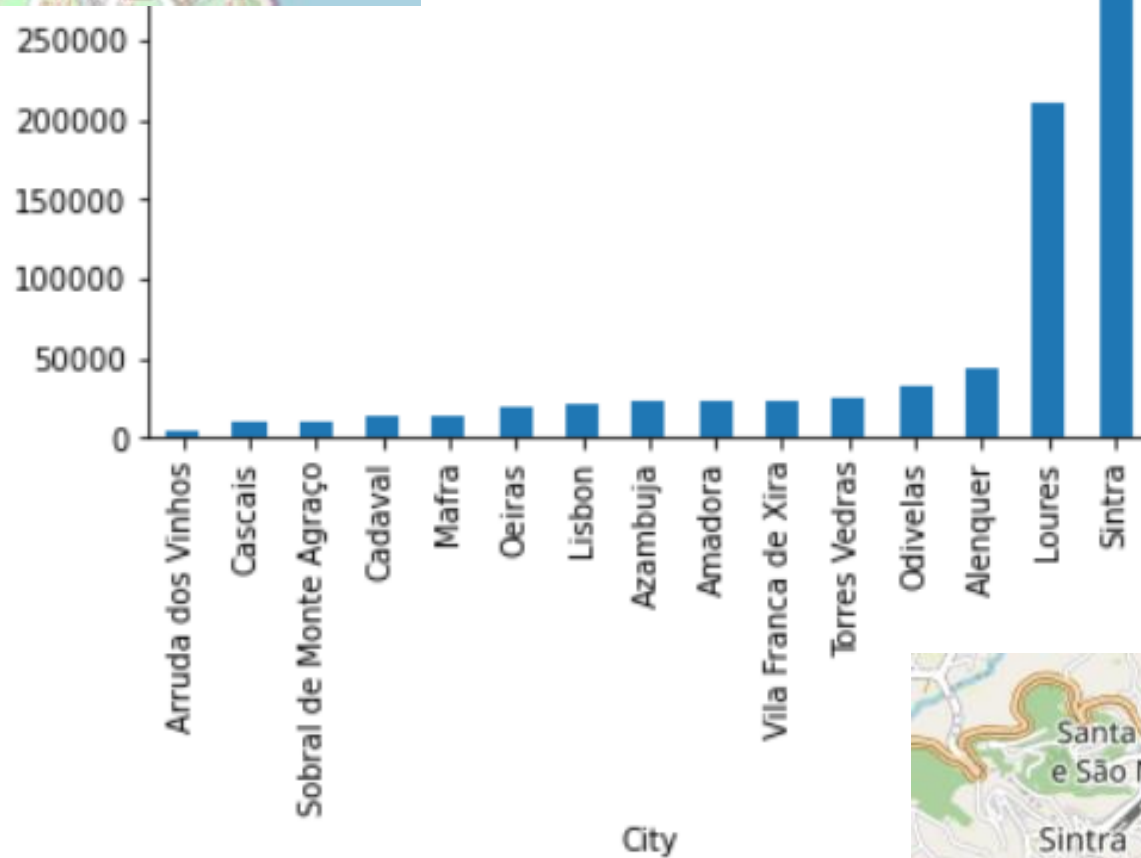
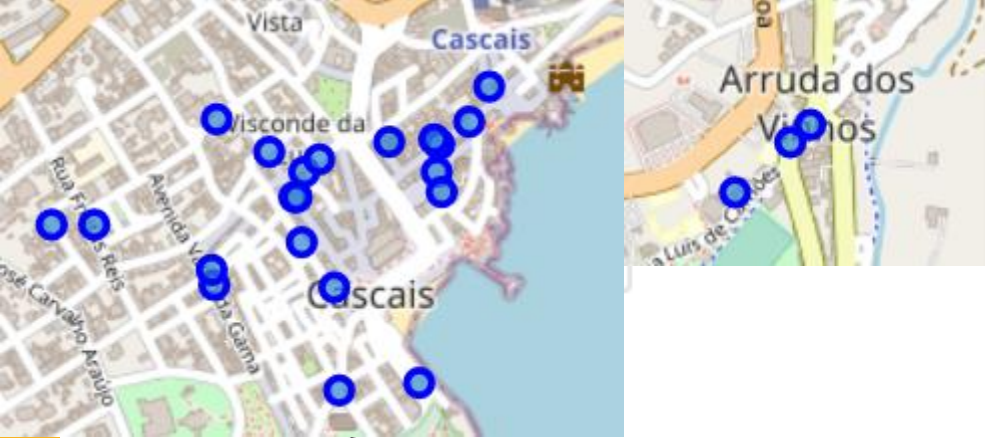
Portuguese, Sushi and Modern European Restaurants are the most frequent



CUISINE VARIETY

- The center of Lisbon has the most variety of food, along with Cascais and Amadora
- The most frequent cuisine, in almost all counties, is the Portuguese cuisine





POPULATION PER VENUE

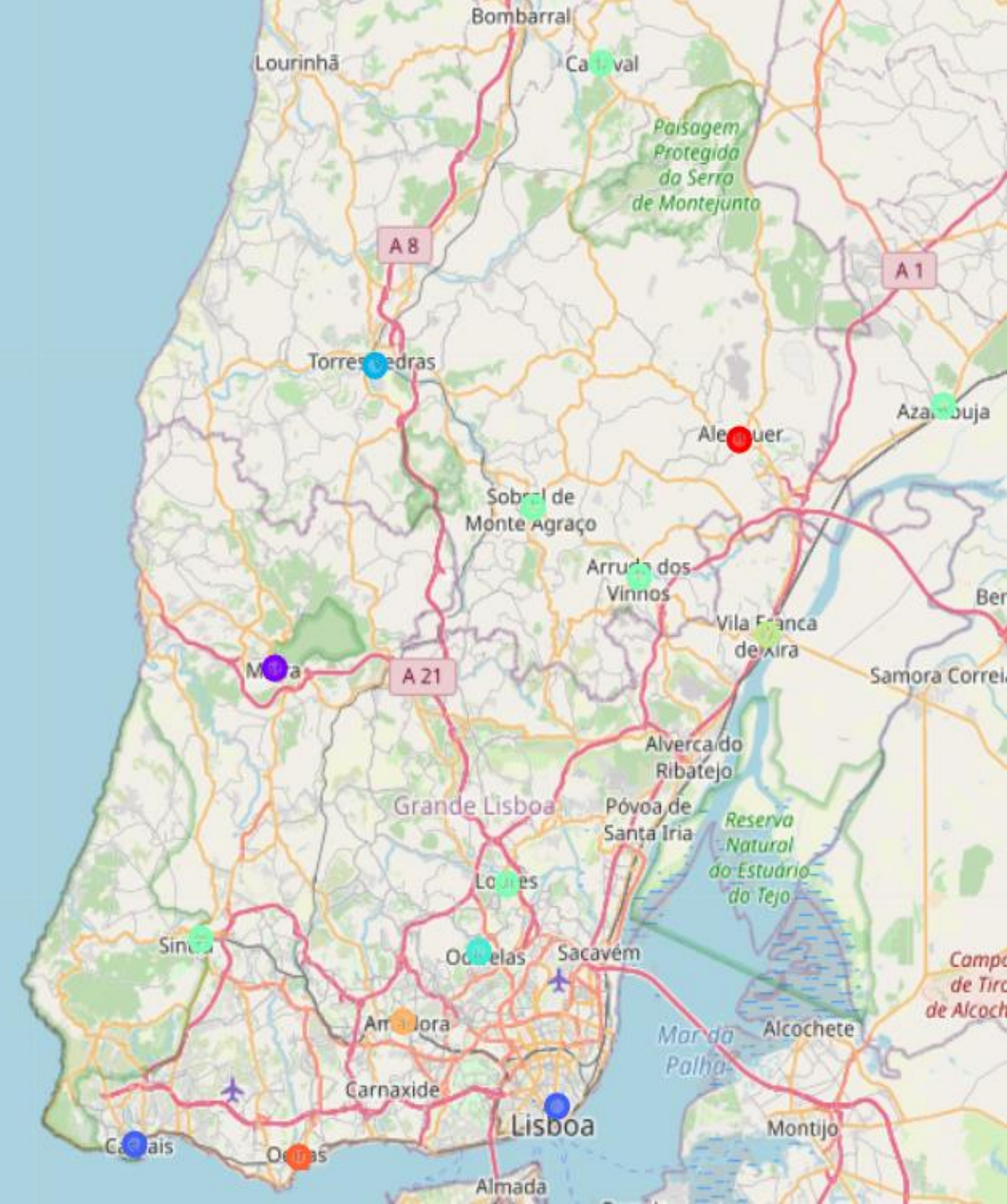
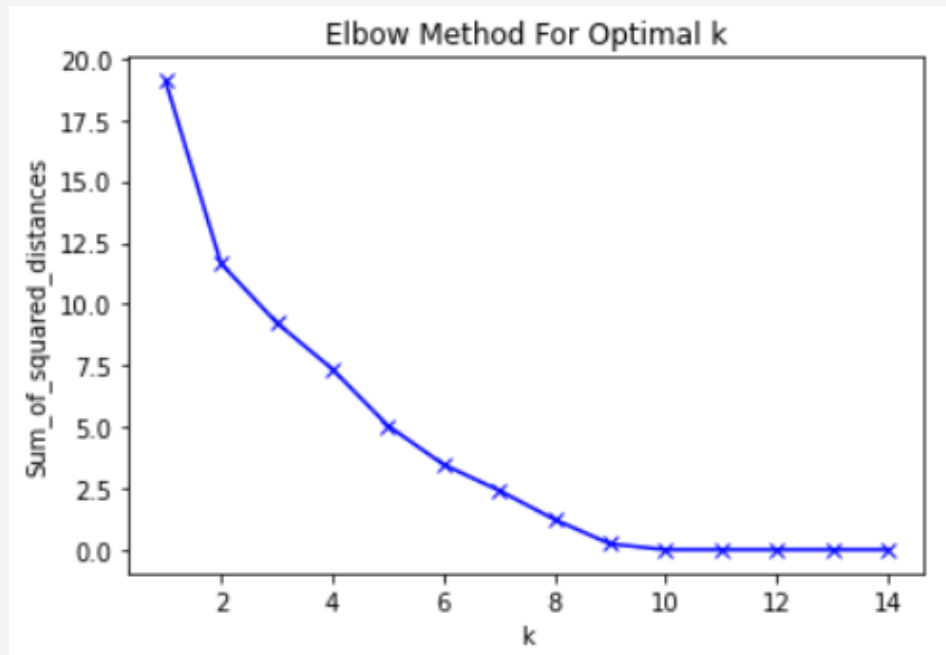
We can easily see that Sintra and Loures have the biggest lack of restaurants

On the other hand, Arruda dos Vinhos and Cascais have a lot of restaurants



CLUSTERING LISBON

- With the help of the elbow method, the conclusion is that the best number of clusters is 9

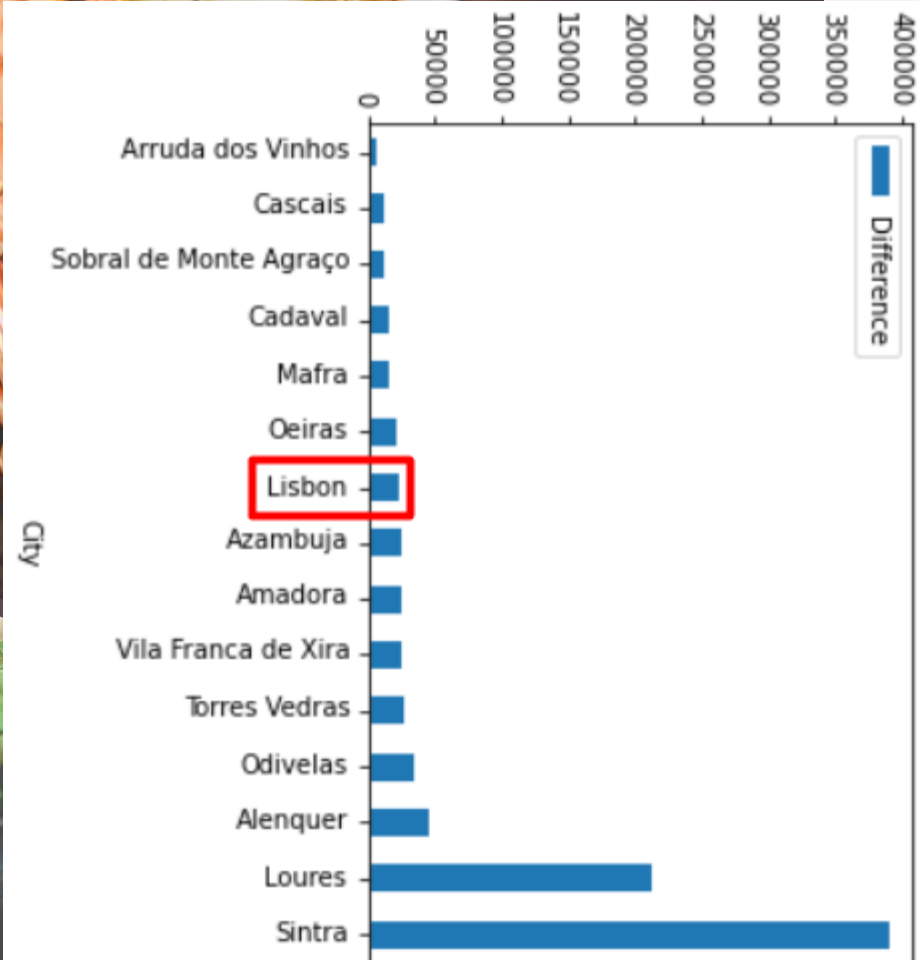


FIRST CLUSTER



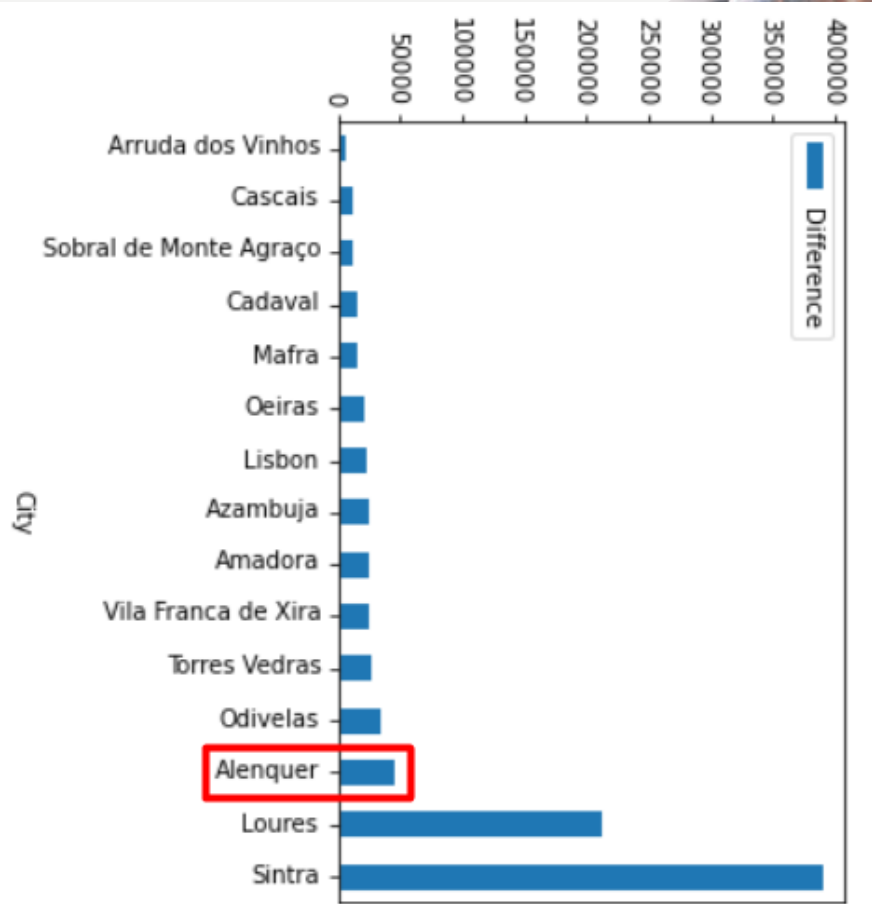
---- Lisbon ----

	Venue	Freq.
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3	Chinese Restaurant	0.08
4	African Restaurant	0.04
5	Mediterranean Restaurant	0.04
6	Seafood Restaurant	0.04
7	Vietnamese Restaurant	0.04
8	Empanada Restaurant	0.04
9	Brazilian Restaurant	0.04



SECOND CLUSTER

----	Alenquer	----
	Venue	Freq.
0	Modern European Restaurant	1.0



THIRD CLUSTER

---- Oeiras ----

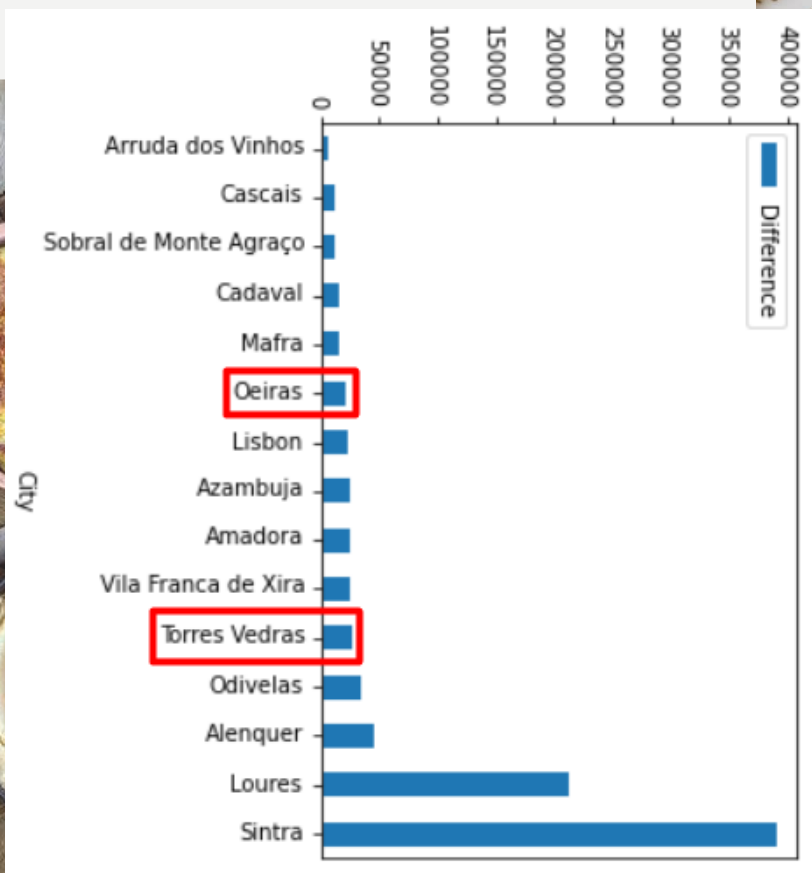
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1	Sushi Restaurant	0.22
2	Asian Restaurant	0.22
3	Seafood Restaurant	0.11

---- Torres Vedras ----

	Venue	Freq.
0	Tapas Restaurant	0.67
1	Sushi Restaurant	0.33

Oeiras

Torres Vedras

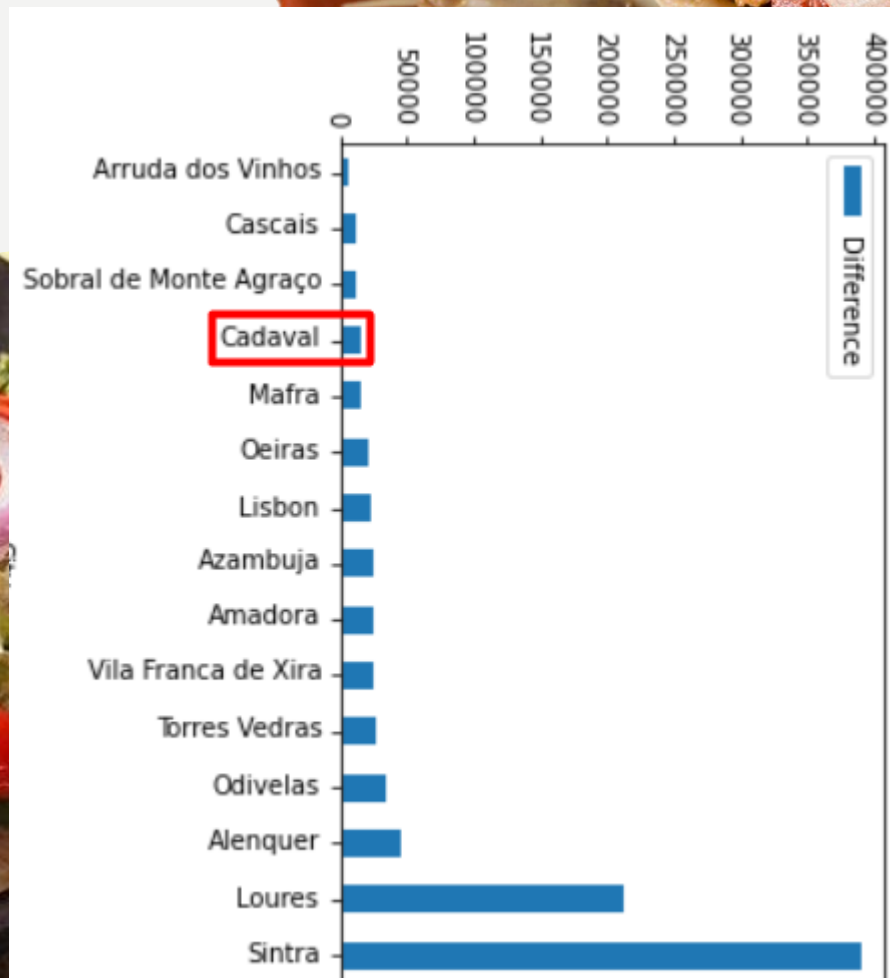


FOURTH CLUSTER

---- Cadaval ----

	Venue	Freq.
0	Portuguese Restaurant	1.0

Cadaval

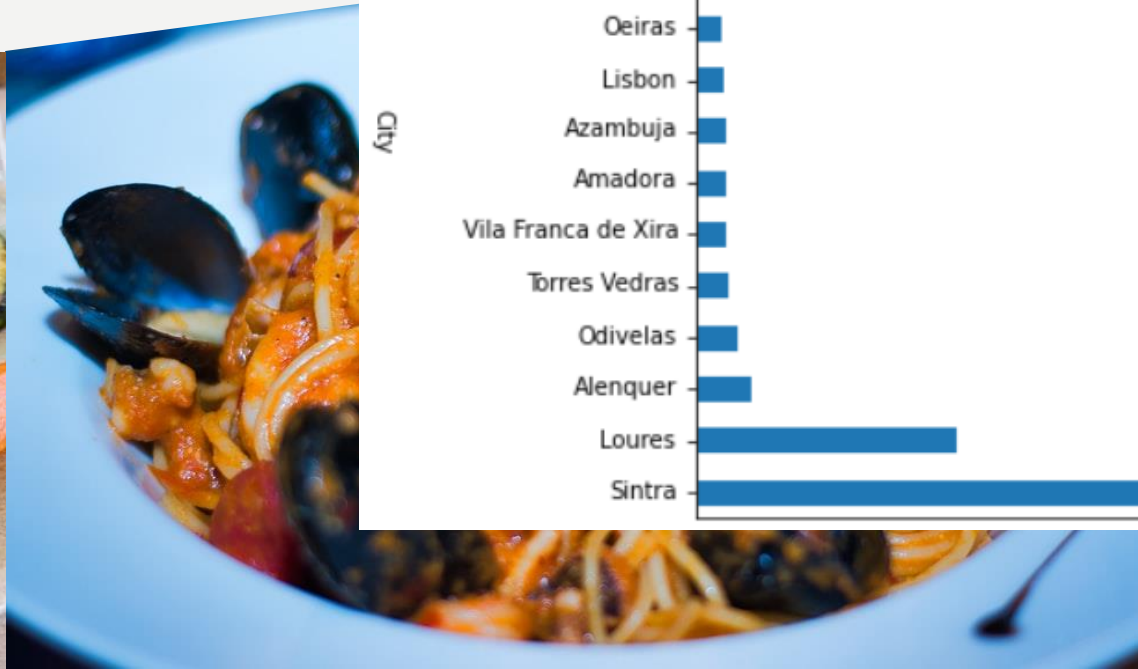
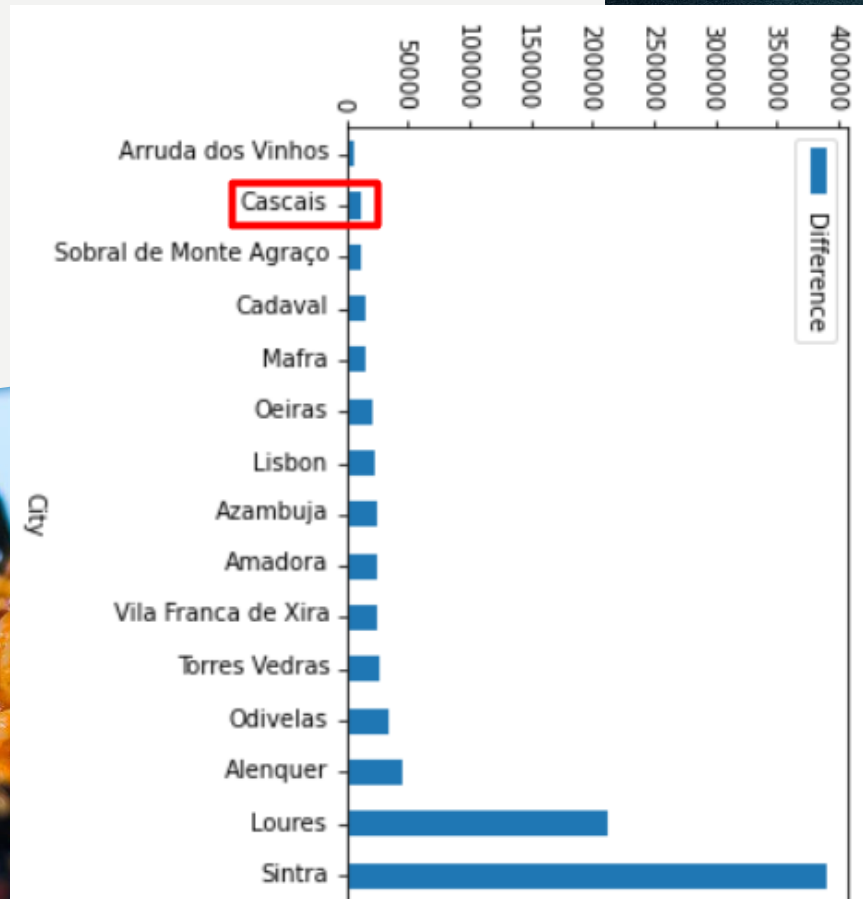


FIFTH CLUSTER

---- Cascais ----

		Venue	Freq.
0	Portuguese Restaurant		0.33
1	Indian Restaurant		0.19
2	Sushi Restaurant		0.14
3	Tapas Restaurant		0.10
4	Seafood Restaurant		0.10
5	Italian Restaurant		0.10
6	Vegetarian / Vegan Restaurant		0.05

Cascais



SIXTH CLUSTER

---- Amadora ----

	Venue	Freq.
0	Portuguese Restaurant	0.50
1	Fast Food Restaurant	0.25
2	Tapas Restaurant	0.12
3	Sushi Restaurant	0.12

---- Vila Franca de Xira ----

	Venue	Freq.
0	Portuguese Restaurant	0.50
1	Japanese Restaurant	0.17
2	Sushi Restaurant	0.17
3	Seafood Restaurant	0.17

---- Azambuja ----

	Venue	Freq.
0	Portuguese Restaurant	1.0

---- Arruda dos Vinhos ----

	Venue	Freq.
0	Portuguese Restaurant	1.0

---- Mafra ----

	Venue	Freq.
0	Portuguese Restaurant	0.83
1	Sushi Restaurant	0.17



Vila Franca de Xira



Arruda dos Vinhos



Mafra



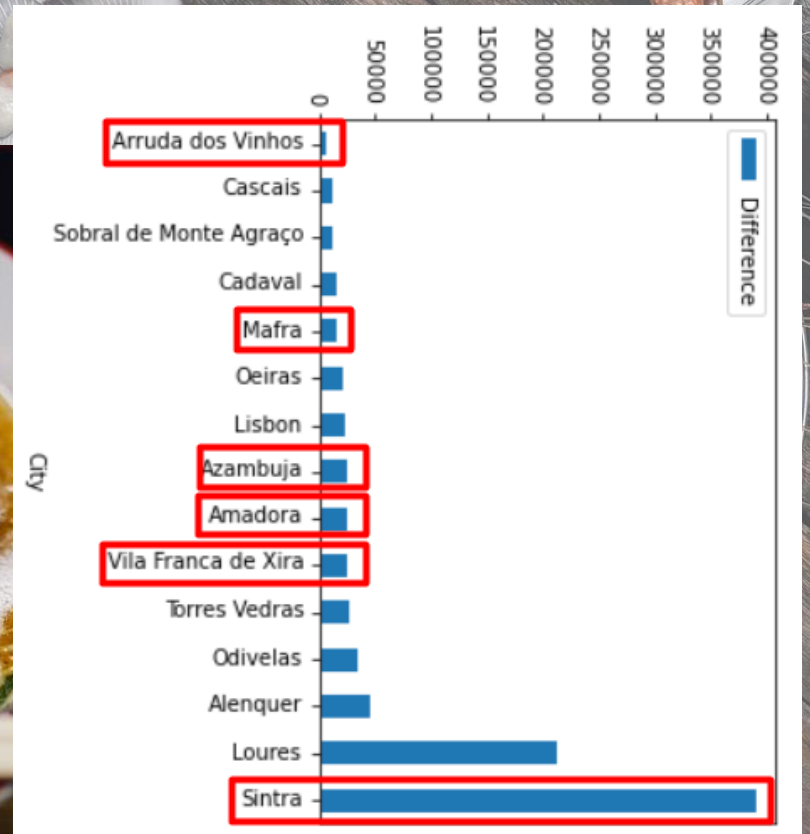
Sintra



Azambuja



Amadora

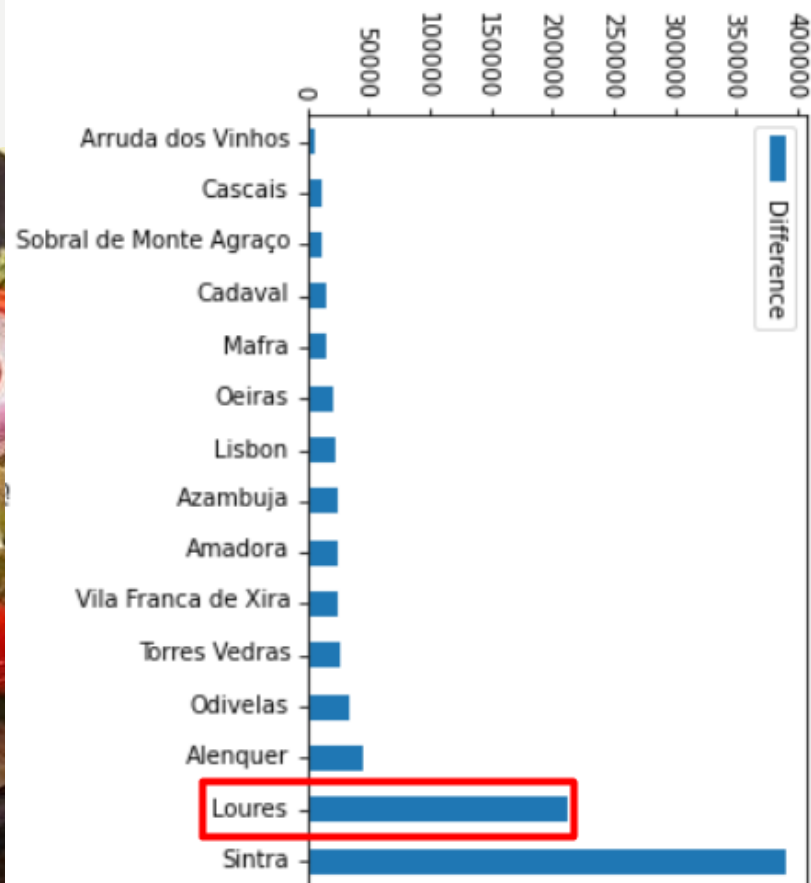


SEVENTH CLUSTER

---- Loures ----

	Venue	Freq.
0	Portuguese Restaurant	1.0

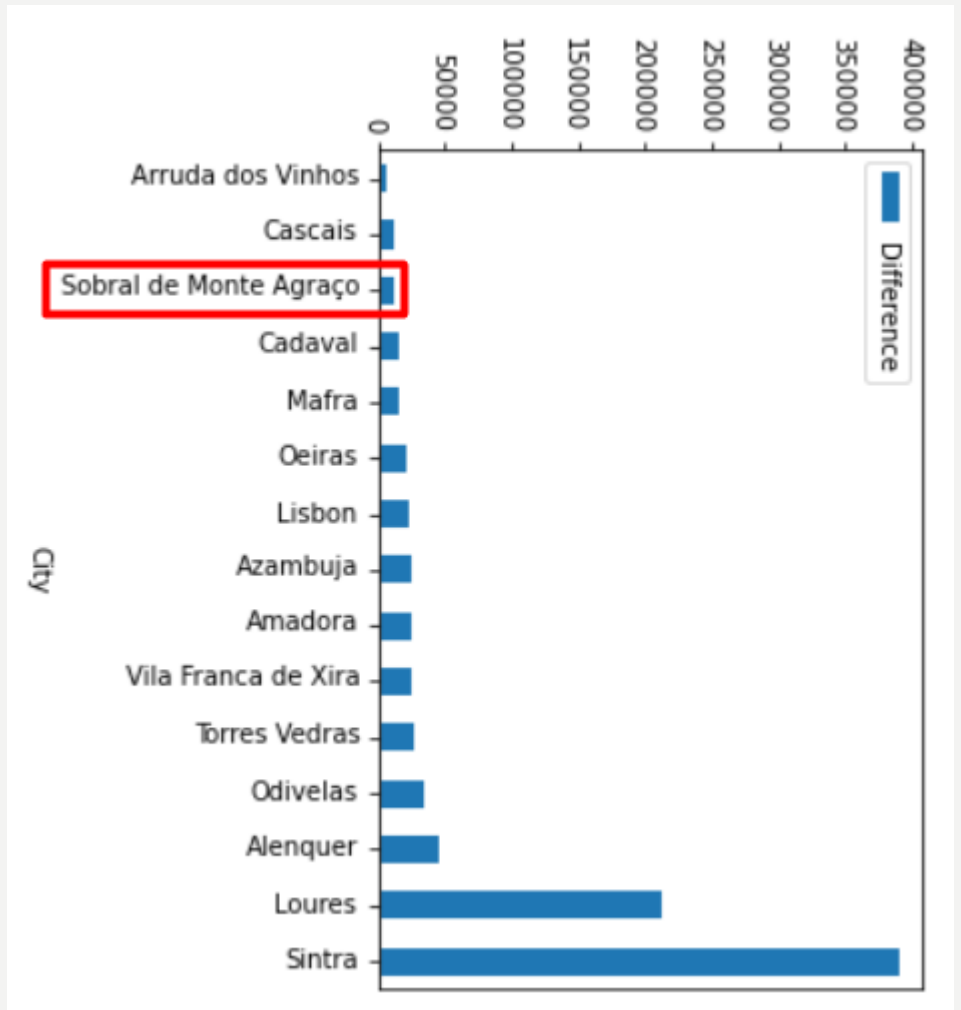
Loures



EIGHTH CLUSTER

---- Sobral de Monte Agraço ----
0 Venue Freq.
Portuguese Restaurant 1.0

Sobral de Monte Agraço

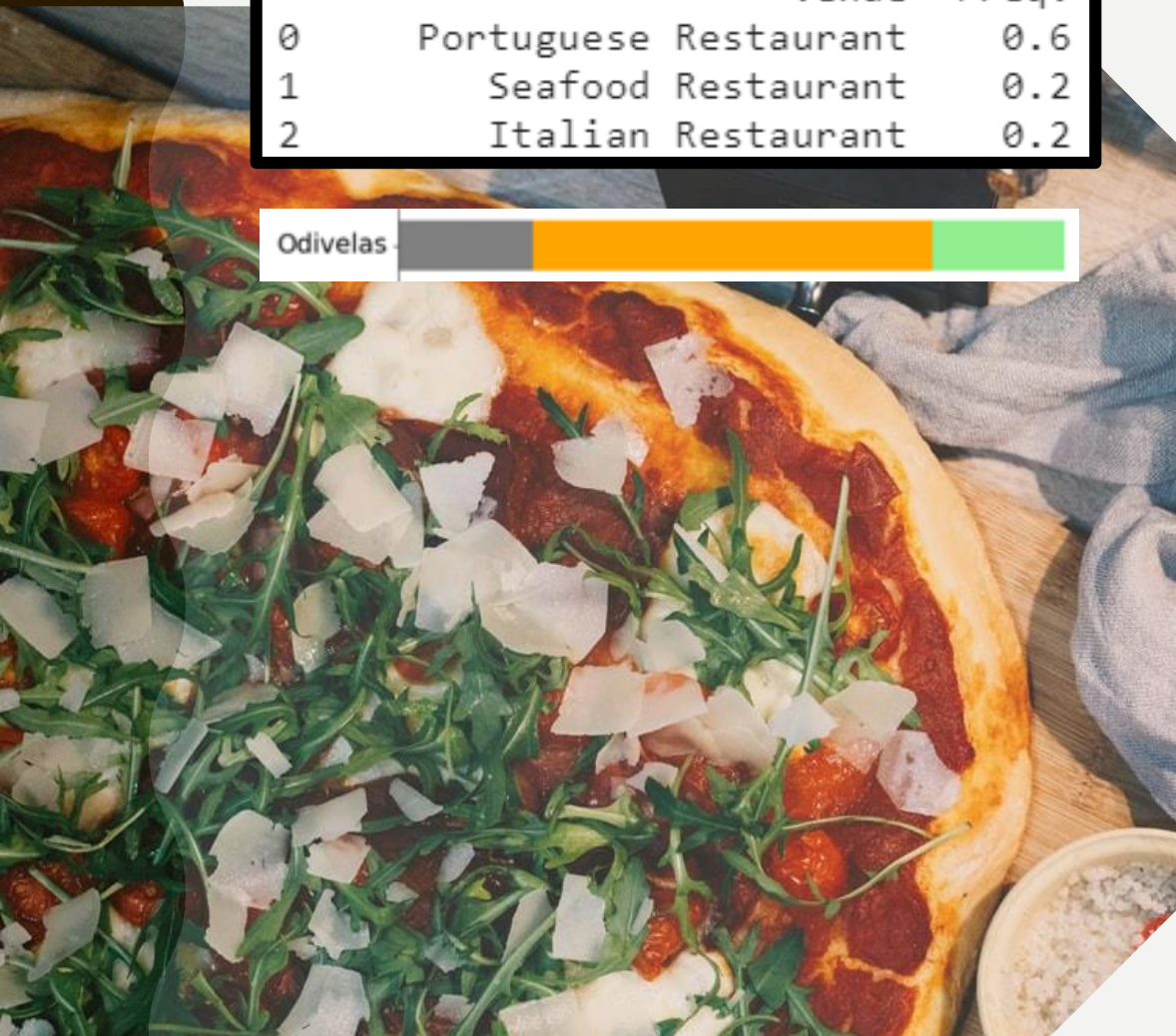
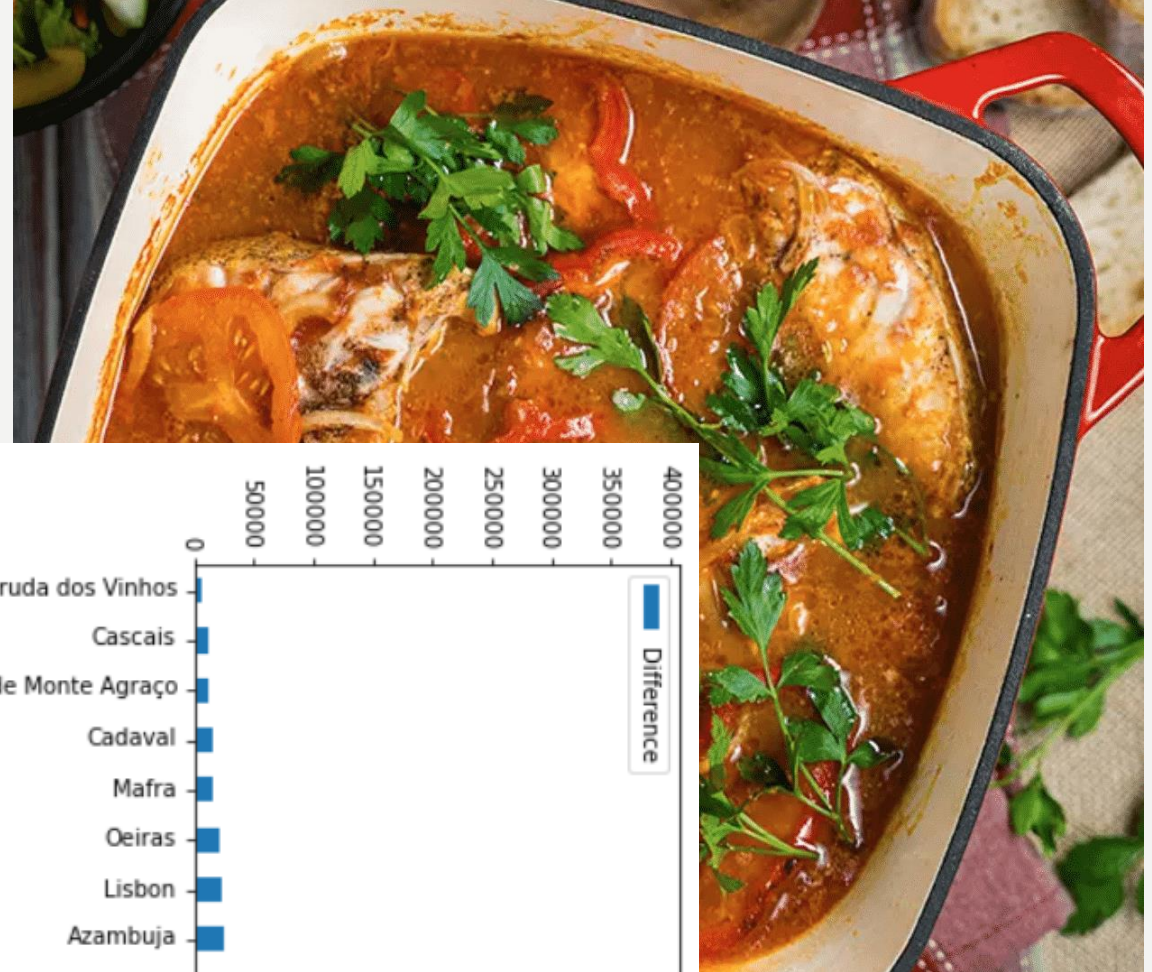
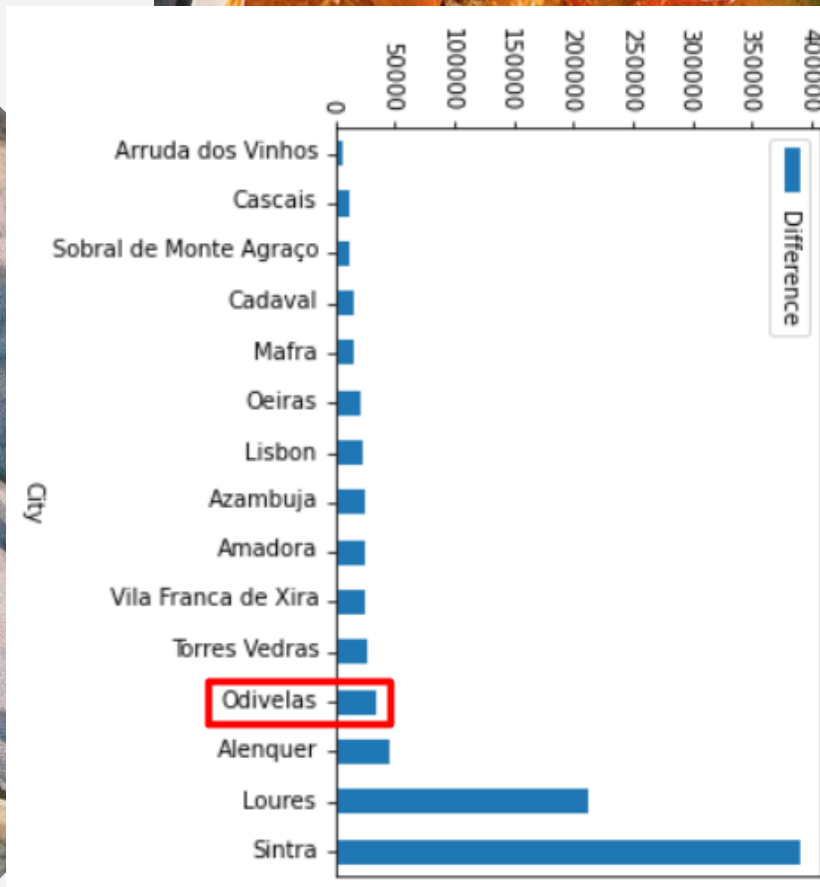


NINETH CLUSTER

---- Odivelas ----

	Venue	Freq.
0	Portuguese Restaurant	0.6
1	Seafood Restaurant	0.2
2	Italian Restaurant	0.2

Odivelas



RECAP

- We concluded that Lisbon and Cascais have the most variety of cuisines, which is normal as the main tourism focus lays in the center of Lisbon.
 - On the other hand, Alenquer, Arruda dos Vinhos, Azambuja, Cadaval, Loures, Sintra and Sobral de Monte Agraço have the least variety.
 - The most common restaurants are Portuguese and Sushi Restaurants, and the least common are African and Mediterranean restaurants.
 - Sintra and Loures have the most lack of restaurants and Arruda dos Vinhos and Cascais have the biggest number of venues.
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CONCLUSION

- If you plan on opening a Portuguese cuisine restaurant, you will have lots of competition. If you don't want competition, you can open up in Alenquer or Torres Vedras.
- If you plan on opening another type of cuisine, and have no competition, the best places would be Arruda dos Vinhos, Azambuja, Cadaval, Loures, Sintra and Sobral de Monte Agraço.
- If competition is not a problem, the best places are Lisbon and Cascais, which have a lot of tourism focus and you can open up almost any variety you want.
- The best cuisine types to open up are Portuguese, Sushi, Modern European, Tapas and Seafood.
- Of course this decisions are completely up to the person who will open a new restaurant business. The main idea is to give some insights of what would suit best for the desired restaurant business.

