

Best Location for Indian Residents/Visitors in Barcelona

1. Introduction

1.1 Background

Barcelona is one of the world's leading tourist, economic, trade fair and cultural centres, and its influence in commerce, education, entertainment, sports, media, fashion, science, and the arts all contribute to its status as one of the major global cities. In 2016 about 59% of the inhabitants of the city were born in Catalonia and 18.5% coming from the rest of the country. In addition to that, 22.5% of the population was born outside of Spain, a proportion which has more than doubled since 2001 and more than quintupled since 1996 when it was 8.6% respectively 3.9%.

1.2 Problem

Since immigration has increased there are lots of Indians who travel there but they don't know which location will be most suitable for them. We wish to find a good neighbourhood for living in the city which has good Indian restaurants and other places which might interest them.

1.3 People Benefitted by the Project

People of Indian Origin who want to settle in Barcelona and people who are going there for long trips will be most benefitted. Also, tourist can use this to find neighbourhoods which will have quick access to Indian stores and veg food available. Vegetarian people are most benefitted as its difficult to find suitable food in such countries.

2. Data Acquisition and Cleaning

Data is mostly collected from Four-square and web scraping.

List of Neighbourhoods will be collected using web Scraping the following link:

https://en.wikipedia.org/wiki/Category:Neighbourhoods_of_Barcelona

For each neighbourhood, we will use Geocoder Python to get its coordinate.

Venues from Four-Square will be used. Web scraping will be used for other data which isn't available on FourSquare.

Data will be cleaned and organized then displayed in forms understandable to basic users.

Machine learning techniques will be used to classify and segment neighbourhoods.

We have used K-Means Method here for the sake of simplicity.

This will help decide which one is most suitable for the person's needs.

3. Observations and Discussions

3.1 We formed 6 clusters which group different areas based on types of venues-

Cluster 0 has 26 neighbourhoods

Cluster 1 has 1 neighbourhood

Cluster 2 has 38 neighbourhoods

Cluster 3 has 2 neighbourhoods

Cluster 4 has 1 neighbourhood

Cluster 5 has 8 neighbourhoods

3.2 Frequency of Venues in all Places were shown as-

----Baró de Viver----

	venue	freq
0	Clothing Store	0.08
1	Burger Joint	0.05
2	Bar	0.04
3	Spanish Restaurant	0.04
4	Supermarket	0.04

----Bon Pastor----

	venue	freq
0	Clothing Store	0.10
1	Supermarket	0.05
2	Electronics Store	0.04
3	Spanish Restaurant	0.04
4	Mediterranean Restaurant	0.04

----Camp d'en Grassot i Gràcia Nova----

	venue	freq
0	Tapas Restaurant	0.06
1	Restaurant	0.05
2	Plaza	0.04
3	Indie Movie Theater	0.04
4	Bar	0.04

----Can Baró----

	venue	freq
0	Bar	0.07
1	Park	0.06
2	Spanish Restaurant	0.06
3	Gym	0.05
4	Grocery Store	0.04

----Can Peguera----

	venue	freq
0	Tapas Restaurant	0.09
1	Grocery Store	0.07
2	Spanish Restaurant	0.06
3	Supermarket	0.06
4	Pizza Place	0.05

----Canyelles (neighbourhood)----

	venue	freq
0	Mediterranean Restaurant	0.2
1	Soccer Stadium	0.2
2	Restaurant	0.2
3	BBQ Joint	0.2
4	Pizza Place	0.2

----Ciutat Meridiana----

	venue	freq
0	Metro Station	0.22
1	Mediterranean Restaurant	0.11
2	Plaza	0.11
3	Train Station	0.11
4	Café	0.11

----Diagonal Mar i el Front Marítim del Poblenou----

	venue	freq
0	Mediterranean Restaurant	0.13
1	Restaurant	0.07
2	Italian Restaurant	0.04
3	Spanish Restaurant	0.04
4	Hotel	0.04

----Dreta de l'Eixample----

	venue	freq
0	Hotel	0.17
1	Hostel	0.08
2	Tapas Restaurant	0.05
3	Boutique	0.05
4	Bookstore	0.04

----El Baix Guinardó----

	venue	freq
0	Italian Restaurant	0.05
1	Restaurant	0.05

2	Bakery	0.04
3	Tapas Restaurant	0.04
4	Brewery	0.04

----El Besòs i el Maresme----

	venue	freq
0	Hotel	0.07
1	Café	0.05
2	Tapas Restaurant	0.05
3	Spanish Restaurant	0.04
4	Restaurant	0.04

----El Camp de l'Arpa del Clot----

	venue	freq
0	Bakery	0.07
1	Italian Restaurant	0.06
2	Restaurant	0.05
3	Pizza Place	0.04
4	Spanish Restaurant	0.03

----El Carmel----

	venue	freq
0	Spanish Restaurant	0.12
1	Grocery Store	0.08
2	Park	0.08
3	Plaza	0.06
4	Mediterranean Restaurant	0.06

----El Clot----

	venue	freq
0	Gym / Fitness Center	0.07
1	Spanish Restaurant	0.07
2	Supermarket	0.05
3	Restaurant	0.05
4	Grocery Store	0.05

----El Coll----

	venue	freq
0	Café	0.09
1	Park	0.09
2	Spanish Restaurant	0.09
3	Grocery Store	0.06
4	Bar	0.06

----El Congrés i els Indians----

	venue	freq
0	Tapas Restaurant	0.07
1	Bar	0.07
2	Grocery Store	0.07
3	Restaurant	0.06
4	Spanish Restaurant	0.05

----El Guinardó----

	venue	freq
0	Tapas Restaurant	0.11
1	Restaurant	0.08
2	Bar	0.08
3	Grocery Store	0.06
4	Italian Restaurant	0.05

----El Parc i la Llacuna del Poblenou----

	venue	freq
0	Mediterranean Restaurant	0.06
1	Hotel	0.06
2	Restaurant	0.05
3	Spanish Restaurant	0.05
4	Vegetarian / Vegan Restaurant	0.03

----El Poble-sec, Barcelona----

	venue	freq
0	Tapas Restaurant	0.11
1	Cocktail Bar	0.06
2	Spanish Restaurant	0.06
3	Pizza Place	0.06
4	Park	0.05

----El Putget i Farró----

	venue	freq
0	Bakery	0.08
1	Spanish Restaurant	0.06
2	Plaza	0.05
3	Café	0.05
4	Japanese Restaurant	0.04

----El Raval----

	venue	freq
0	Tapas Restaurant	0.09
1	Spanish Restaurant	0.09
2	Cocktail Bar	0.07
3	Mediterranean Restaurant	0.06
4	Italian Restaurant	0.04

----El Turó de la Peira----

	venue	freq
0	Tapas Restaurant	0.09
1	Grocery Store	0.07
2	Supermarket	0.05
3	Spanish Restaurant	0.05
4	Pizza Place	0.05

----Fort Pienc----

	venue	freq
0	Hotel	0.09

1	Coffee Shop	0.08
2	Burger Joint	0.05
3	Spanish Restaurant	0.04
4	Tapas Restaurant	0.03

----Gothic Quarter, Barcelona----

	venue	freq
0	Tapas Restaurant	0.07
1	Spanish Restaurant	0.07
2	Italian Restaurant	0.06
3	Hotel	0.06
4	Cocktail Bar	0.06

----Gran Via (Barcelona)----

	venue	freq
0	Tapas Restaurant	0.07
1	Plaza	0.06
2	Mediterranean Restaurant	0.05
3	Spanish Restaurant	0.05
4	Bar	0.04

----Horta, Barcelona----

	venue	freq
0	Spanish Restaurant	0.09
1	Café	0.08
2	Tapas Restaurant	0.08
3	Park	0.06
4	Soccer Field	0.06

----Hostafrancs----

	venue	freq
0	Hotel	0.06
1	Tapas Restaurant	0.06
2	Restaurant	0.05
3	Mediterranean Restaurant	0.04
4	Scenic Lookout	0.03

----L'Antiga Esquerra de l'Eixample----

	venue	freq
0	Restaurant	0.08
1	Mediterranean Restaurant	0.07
2	Spanish Restaurant	0.07
3	Tapas Restaurant	0.05
4	Japanese Restaurant	0.05

----La Barceloneta, Barcelona----

	venue	freq
0	Tapas Restaurant	0.10
1	Mediterranean Restaurant	0.06
2	Bar	0.05
3	Spanish Restaurant	0.04
4	Restaurant	0.04

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----La Bordeta (Barcelona)----
      venue  freq
0      Spanish Restaurant  0.06
1      Tapas Restaurant    0.06
2      Wine Bar            0.06
3      Supermarket         0.04
4      Mediterranean Restaurant 0.04

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----La Clota----
      venue  freq
0      Tapas Restaurant    0.07
1      Spanish Restaurant  0.07
2      Plaza               0.06
3      Restaurant          0.06
4      Park                0.05

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----La Font d'en Fargues----
      venue  freq
0      Tapas Restaurant    0.09
1      Grocery Store       0.05
2      Bar                 0.05
3      Restaurant          0.05
4      Spanish Restaurant  0.05

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----La Font de la Guatlilla----
      venue  freq
0      Mediterranean Restaurant 0.05
1      Plaza               0.05
2      Hotel               0.04
3      Scenic Lookout      0.04
4      Tapas Restaurant    0.04

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----La Guineueta, Barcelona----
      venue  freq
0      Grocery Store       0.11
1      Café                0.08
2      Tapas Restaurant    0.08
3      Plaza               0.06
4      Spanish Restaurant  0.06

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----La Marina de Port----
      venue  freq
0      Clothing Store      0.07
1      Café                0.06
2      Spanish Restaurant  0.05
3      Restaurant          0.05
4      Italian Restaurant  0.04

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----La Marina del Prat Vermell----
      venue  freq

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0	Clothing Store	0.07
1	Café	0.06
2	Spanish Restaurant	0.05
3	Restaurant	0.05
4	Italian Restaurant	0.04

----La Maternitat i Sant Ramon----

	venue	freq
0	Pizza Place	0.07
1	Spanish Restaurant	0.07
2	Restaurant	0.06
3	Supermarket	0.05
4	Bakery	0.04

----La Nova Esquerra de l'Eixample----

	venue	freq
0	Restaurant	0.12
1	Spanish Restaurant	0.05
2	Hotel	0.05
3	Café	0.04
4	Wine Shop	0.04

----La Prosperitat----

	venue	freq
0	Spanish Restaurant	0.12
1	Grocery Store	0.08
2	Pizza Place	0.06
3	Supermarket	0.05
4	Tapas Restaurant	0.05

----La Sagrera----

	venue	freq
0	Grocery Store	0.08
1	Supermarket	0.07
2	Tapas Restaurant	0.06
3	Mediterranean Restaurant	0.05
4	Restaurant	0.05

----La Salut----

	venue	freq
0	Café	0.09
1	Restaurant	0.09
2	Tapas Restaurant	0.06
3	Indie Movie Theater	0.06
4	Donut Shop	0.06

----La Teixonera----

	venue	freq
0	Spanish Restaurant	0.09
1	Park	0.09
2	Metro Station	0.06
3	Tapas Restaurant	0.06

4 Grocery Store 0.06

----La Trinitat Nova----

	venue	freq
0	Spanish Restaurant	0.23
1	Supermarket	0.15
2	Grocery Store	0.15
3	Music Venue	0.08
4	Park	0.08

----La Verneda i la Pau----

	venue	freq
0	Tapas Restaurant	0.10
1	Coffee Shop	0.10
2	Supermarket	0.06
3	Café	0.06
4	Soccer Field	0.06

----La Vila Olímpica del Poblenou----

	venue	freq
0	Hotel	0.05
1	Tapas Restaurant	0.04
2	Café	0.04
3	Coffee Shop	0.04
4	Spanish Restaurant	0.03

----Les Corts (neighbourhood)----

	venue	freq
0	Restaurant	0.12
1	Spanish Restaurant	0.06
2	Café	0.05
3	Wine Shop	0.04
4	Cocktail Bar	0.04

----Les Roquetes, Barcelona----

	venue	freq
0	Spanish Restaurant	0.19
1	Grocery Store	0.12
2	Park	0.08
3	Café	0.04
4	Castle	0.04

----Les Tres Torres----

	venue	freq
0	Japanese Restaurant	0.07
1	Bakery	0.07
2	Mediterranean Restaurant	0.06
3	Restaurant	0.06
4	Spanish Restaurant	0.05

----Montbau----

	venue	freq
0	Spanish Restaurant	0.11
1	Plaza	0.08
2	Park	0.08
3	Restaurant	0.08
4	Grocery Store	0.05

----Montjuïc----

	venue	freq
0	Restaurant	0.08
1	Theater	0.05
2	Hotel	0.05
3	Pizza Place	0.05
4	Café	0.05

----Navas, Sant Andreu----

	venue	freq
0	Spanish Restaurant	0.09
1	Supermarket	0.05
2	Restaurant	0.05
3	Plaza	0.04
4	Tapas Restaurant	0.04

----Pedralbes----

	venue	freq
0	Park	0.11
1	Restaurant	0.07
2	Hotel	0.07
3	Mediterranean Restaurant	0.07
4	Café	0.07

----Porta, Barcelona----

	venue	freq
0	Grocery Store	0.10
1	Tapas Restaurant	0.09
2	Spanish Restaurant	0.06
3	Supermarket	0.04
4	Park	0.04

----Provençals del Poblenou----

	venue	freq
0	Mediterranean Restaurant	0.08
1	Hotel	0.06
2	Bakery	0.05
3	Pizza Place	0.04
4	Spanish Restaurant	0.04

----Sagrada Família (neighborhood)----

	venue	freq
0	Italian Restaurant	0.06
1	Burger Joint	0.05
2	Bakery	0.05

3	Spanish Restaurant	0.04
4	Restaurant	0.03

----Sant Andreu de Palomar----

	venue	freq
0	Spanish Restaurant	0.08
1	Park	0.05
2	Supermarket	0.05
3	Tapas Restaurant	0.05
4	Coffee Shop	0.04

----Sant Antoni, Barcelona----

	venue	freq
0	Tapas Restaurant	0.09
1	Cocktail Bar	0.05
2	Coffee Shop	0.04
3	Pizza Place	0.04
4	Hotel	0.04

----Sant Genís dels Agudells----

	venue	freq
0	Park	0.21
1	Plaza	0.07
2	Playground	0.07
3	Bus Station	0.07
4	Restaurant	0.07

----Sant Gervasi - Galvany----

	venue	freq
0	Mediterranean Restaurant	0.05
1	Spanish Restaurant	0.05
2	Restaurant	0.05
3	Japanese Restaurant	0.04
4	Italian Restaurant	0.04

----Sant Gervasi - la Bonanova----

	venue	freq
0	Plaza	0.10
1	Mediterranean Restaurant	0.10
2	Spanish Restaurant	0.07
3	Japanese Restaurant	0.05
4	Park	0.05

----Sant Martí de Provençals----

	venue	freq
0	Supermarket	0.12
1	Tapas Restaurant	0.07
2	Coffee Shop	0.06
3	Bakery	0.06
4	Soccer Field	0.04

----Sant Pere, Barcelona----

	venue	freq
0	Tapas Restaurant	0.06
1	Cocktail Bar	0.05
2	Hotel	0.04
3	Restaurant	0.04
4	Bakery	0.04

----Sants----

	venue	freq
0	Mediterranean Restaurant	0.06
1	Tapas Restaurant	0.06
2	Restaurant	0.05
3	Spanish Restaurant	0.05
4	Hostel	0.04

----Sants-Badal----

	venue	freq
0	Tapas Restaurant	0.07
1	Pizza Place	0.06
2	Hostel	0.05
3	Bakery	0.04
4	Restaurant	0.04

----Sarrià, Barcelona----

	venue	freq
0	Bakery	0.09
1	Burger Joint	0.06
2	Train Station	0.06
3	Café	0.06
4	Hotel	0.06

----Tibidabo----

	venue	freq
0	Theme Park Ride / Attraction	0.30
1	Theme Park	0.21
2	Scenic Lookout	0.12
3	Mountain	0.06
4	Church	0.03

----Torre Baró----

	venue	freq
0	Metro Station	0.13
1	Grocery Store	0.13
2	Plaza	0.13
3	Park	0.07
4	Gym	0.07

----Trinitat Vella----

	venue	freq
0	Park	0.17
1	Supermarket	0.17

2	Pharmacy	0.08
3	Spanish Restaurant	0.08
4	Tapas Restaurant	0.08

----Vall d'Hebron----

	venue	freq
0	Park	0.11
1	Spanish Restaurant	0.09
2	Plaza	0.09
3	Restaurant	0.09
4	Grocery Store	0.04

----Vallbona, Barcelona----

	venue	freq
0	Metro Station	0.2
1	Tapas Restaurant	0.1
2	Train Station	0.1
3	BBQ Joint	0.1
4	Park	0.1

----Vallcarca i els Penitents----

	venue	freq
0	Café	0.09
1	Park	0.08
2	Bakery	0.05
3	Hotel	0.05
4	Mediterranean Restaurant	0.05

----Vallvidrera----

	venue	freq
0	Breakfast Spot	0.14
1	Park	0.14
2	Office	0.14
3	Gym / Fitness Center	0.14
4	Food & Drink Shop	0.14

----Vallvidrera, el Tibidabo i les Planes----

	venue	freq
0	Light Rail Station	0.12
1	Farmers Market	0.06
2	Spanish Restaurant	0.06
3	National Park	0.06
4	Fountain	0.06

----Verdum----

	venue	freq
0	Grocery Store	0.13
1	Spanish Restaurant	0.10
2	Supermarket	0.06
3	Tapas Restaurant	0.06
4	Pizza Place	0.05

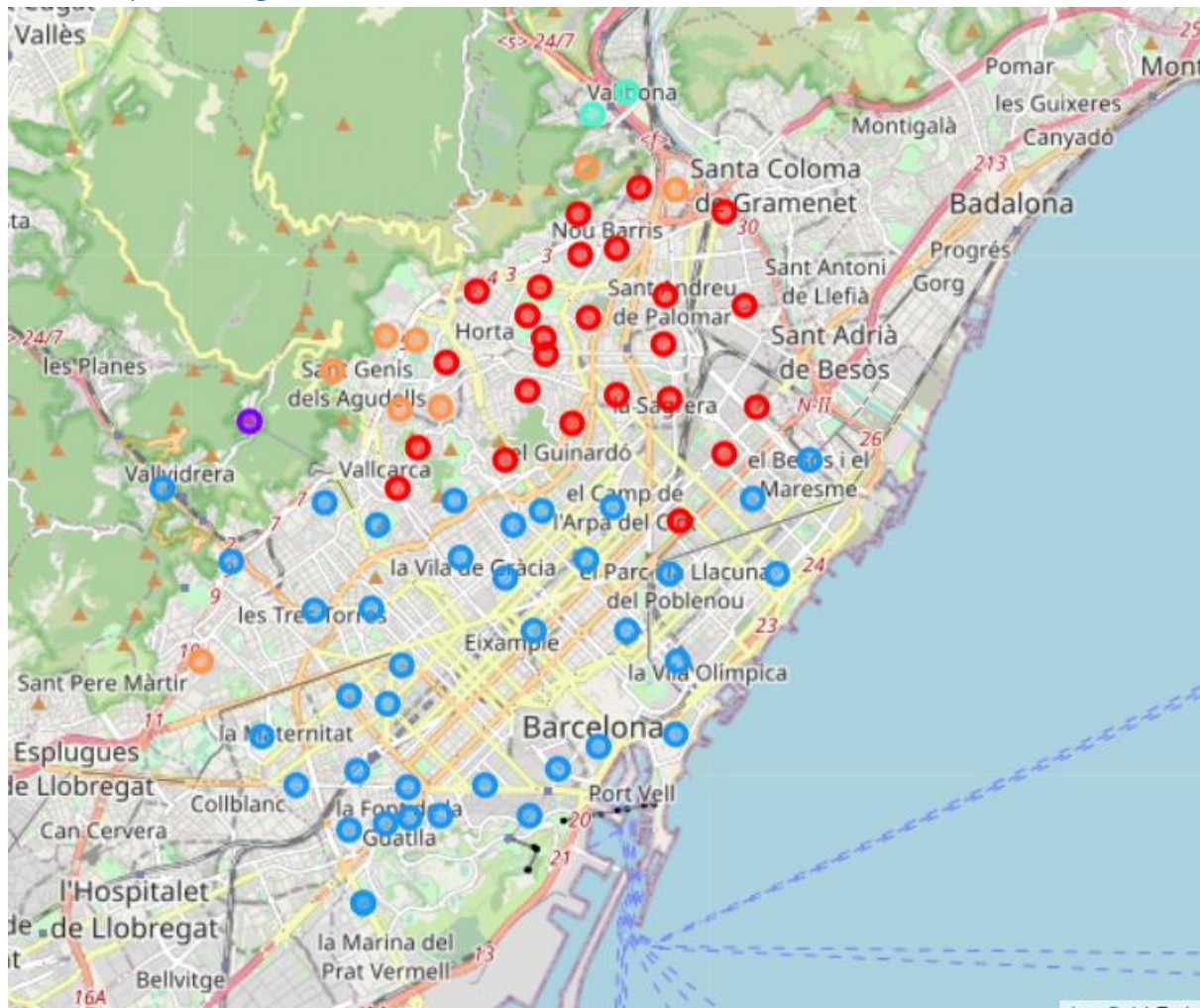
----Vila de Gràcia----

	venue	freq
0	Mediterranean Restaurant	0.05
1	Tapas Restaurant	0.05
2	Restaurant	0.05
3	Pizza Place	0.05
4	Plaza	0.04

----Vilapicina i la Torre Llobeta----

	venue	freq
0	Tapas Restaurant	0.09
1	Pizza Place	0.05
2	Restaurant	0.05
3	Grocery Store	0.05
4	Spanish Restaurant	0.05

3.3 A map showing different clusters with each cluster in a different colour.



3.4 Points of Discussion

- ❖ As we have observed from the data showing frequency of venues, we can figure out type of area.

- ❖ We can know what kinds of location that would be and also find if Indian restaurants/Stores are in the vicinity.
- ❖ Bachelors who prefer hostels to stay can also find Areas with high number of hostels which also have a good nightlife.
- ❖ Families can look for areas with good number of parks and essential stores within 1km.

4. Conclusion

So, after the analysis we have classified different areas based on Venues they have-

Basically, we identified different clusters

Cluster 5 is most suitable for families-

Pedralbes, Sant Genís dels Agudells, Torre Baró being the most suitable

Cluster 2 is most suitable for Bachelors -

Fort Pienc, Sants, Sants-Badal being the most suitable

General good places for living are - El Congrés i els Indians, Can Peguera, Bon Pastor, Sant Andreu de Palomar, Vallvidrera, La Guineueta

For Specific places with Indian Restaurants

Les Tres Torres, Diagonal Mar i el Front Marítim del Poblenou

5. Limitations and Future Scope-

We need to incorporate more data to find what kind of population lives in what region.

Also, we haven't considered distance from workplace in our program.

We can add these and few small more details to make this program more accurate and useful.

We can also expand this to make this useful for people of different religions, countries etc.

People will have to look manually for venues in a long list, we can maybe visualize it better in the future.

