Author: Jose Javier Nicolás

Capstone Project: Berlin vs Madrid

Introduction

We want to compare the offer in leisure and services between 2 big cities like Madrid and Berlin¡. Two of them are capital cities inside the European Union.

Berlin is the capital and largest city of Germany by both area and population. Its 3.8 million inhabitants make it the European Union's most populous city, according to population within city limits. One of Germany's sixteen constituent states, Berlin is surrounded by the State of Brandenburg and contiguous with Potsdam, Brandenburg's capital. Berlin's urban area, which has a population of around 4.5 million, is the second most populous urban area in Germany after the Ruhr. The Berlin-Brandenburg capital region has over six million inhabitants and is Germany's third-largest metropolitan region after the Rhine-Ruhr and Rhine-Main regions.

Madrid is the capital and most-populous city of Spain. The city has almost 3.4 million inhabitants and a metropolitan area population of approximately 6.7 million. It is the second-largest city in the European Union (EU), surpassed only by Berlin in its administrative limits, and its monocentric metropolitan area is the second-largest in the EU, surpassed only by Paris. The municipality covers 604.3 km2 (233.3 sq mi) geographical area.

Every year more than 6 million people visit Berlin looking for its tourist attraction. Madrid is one of the capital for tourism. Every year receives more than 7 million visitors to the capital. But which one is offering the best number of services?.

Data

For this project data available on the Foursquare's API will be used. It will be used to check data in Berlin and Madrid In terms of their neighborhoods. The data used includes information about different venues and their neighborhoods.

Info an access for Foursqure Api https://developer.foursquare.com/

Also we will extract the Berlin districts from Wikipedia: https://en.wikipedia.org/wiki/Boroughs_and_neighborhoods_of_Berlin

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https://en.wikipedia.org/wiki/Districts_of_Madrid

Methodology

We will use the KMeans ML technique to segment districts with similar objects based on neighborhood data, and then we can judge the similarity or dissimilarity between districts and two cities

More info: https://en.wikipedia.org/wiki/K-means_clustering

Results

The geographical coordinates of Berlin are 52.5170365, 13.3888599.
The geographical coordinates of Madrid 40.4167047, -3.7035825.

Berlin	Madrid

Number of venues in Berlin is 336.
Number of venues in Madrid is 585.

There are 193 unique categories.

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Centro
Arganzuela
Retiro
Salamanca
Chamartin
Tetuan
Chamberi
Fuencarral-El Pardo
Moncloa-Aravaca
Latina
Carabanchel
Usera
Puente de Vallecas
Moratalaz
Ciudad Lineal
Hortaleza
Villaverde
Puente de Vallecas
Vicalvaro
San Blas-Canillejas
Barajas
Charlottenburg-Wilmersdorf
Friedrichshain-Kreuzberg
Lichtenberg
Marzahn-Hellersdorf
Mitte
Neukoelln
Pankow
Reinickendorf
Spandau
Steglitz-Zehlendorf
Tempelhof-Schoeneberg
Treptow-Koepenick
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Ten most common venues in all districts:

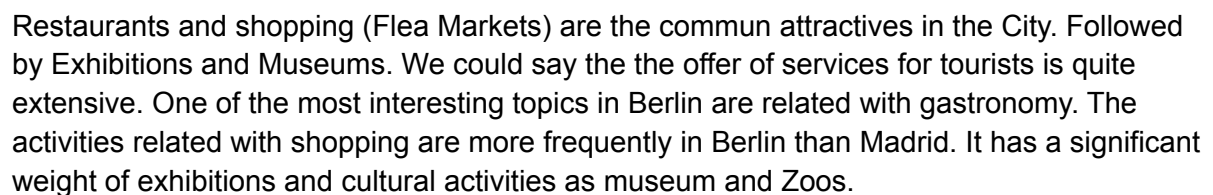|	District	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Arganzuela	Tapas Restaurant	Bakery	Mediterranean Restaurant	Market	Spanish Restaurant	Restaurant	Beer Garden	Cocktail Bar	Falafel Restaurant	Burger Joint
1	Barajas	Hotel	Spanish Restaurant	Argentinian Restaurant	Tapas Restaurant	Restaurant	Plaza	Snack Place	Breakfast Spot	Brewery	Sandwich Place
2	Carabanchel	Spanish Restaurant	Restaurant	Tapas Restaurant	Hotel	Candy Store	Metro Station	Food & Drink Shop	Supermarket	Café	Grocery Store
3	Centro	Plaza	Spanish Restaurant	Hotel	Tapas Restaurant	Bookstore	Gourmet Shop	Hostel	Pastry Shop	Clothing Store	Italian Restaurant
4	Chamartin	Spanish Restaurant	Restaurant	Grocery Store	Supermarket	Plaza	Tapas Restaurant	Mediterranean Restaurant	Bakery	Bar	Health & Beauty Service
5	Chamberi	Spanish Restaurant	Tapas Restaurant	Bar	Restaurant	Café	Theater	Bakery	Plaza	Mediterranean Restaurant	Coffee Shop
6	Charlottenburg-Wilmersdorf	Italian Restaurant	Plaza	Hotel	Bus Stop	Indian Restaurant	Light Rail Station	Comedy Club	Café	Pizza Place	Auto Workshop
7	Ciudad Lineal	Spanish Restaurant	Pizza Place	Argentinian Restaurant	Restaurant	Burger Joint	Gastropub	Supermarket	Hotel	Tapas Restaurant	Cocktail Bar
8	Friedrichshain-Kreuzberg	Café	Bar	Hotel	Vietnamese Restaurant	Ice Cream Shop	Bakery	Pub	Italian Restaurant	Hotel Bar	Shoe Store
9	Hortaleza	Spanish Restaurant	Supermarket	Park	Metro Station	Sandwich Place	Garden	Bar	Bakery	Café	Plaza
10	Latina	Grocery Store	Restaurant	Park	Bakery	Student Center	Supermarket	Zoo Exhibit	Electronics Store	Dumpling Restaurant	Drugstore
11	Lichtenberg	Furniture / Home Store	Hotel	Hardware Store	Café	Indoor Play Area	Hot Dog Joint	Health & Beauty Service	Discount Store	Electronics Store	Dumpling Restaurant
12	Marzahn-Hellersdorf	Supermarket	ATM	Plaza	Pool	Discount Store	Doner Restaurant	Drugstore	Shopping Mall	Metro Station	Go Kart Track
13	Mitte	German Restaurant	Museum	History Museum	Café	Hotel	Vietnamese Restaurant	Restaurant	Art Gallery	Fountain	Scenic Lookout
14	Moncloa-Aravaca	Park	Bus Stop	Castle	Zoo Exhibit	Dive Bar	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant	Drugstore
15	Moratalaz	Plaza	Bar	Metro Station	Brewery	Breakfast Spot	Park	Café	Pizza Place	Ice Cream Shop	Nightclub
16	Neukoelln	Bar	Café	Coffee Shop	Middle Eastern Restaurant	Dive Bar	Italian Restaurant	Bistro	Vegetarian / Vegan Restaurant	Lebanese Restaurant	Pub
17	Pankow	Turkish Restaurant	Tram Station	Asian Restaurant	Zoo Exhibit	Discount Store	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant	Drugstore
18	Puente de Vallecas	Park	Coffee Shop	Gym	Food & Drink Shop	Spanish Restaurant	Tapas Restaurant	Asian Restaurant	Diner	Costume Shop	Creperie
19	Reinickendorf	Zoo Exhibit	Liquor Store	Plaza	Hostel	Health & Beauty Service	Falafel Restaurant	Electronics Store	Dumpling Restaurant	Drugstore	Donut Shop
20	Retiro	Spanish Restaurant	Garden	Supermarket	Plaza	Jazz Club	Brewery	Mediterranean Restaurant	Dog Run	Board Shop	Diner
21	Salamanca	Restaurant	Spanish Restaurant	Clothing Store	Tapas Restaurant	Burger Joint	Furniture / Home Store	Mediterranean Restaurant	Italian Restaurant	Mexican Restaurant	Coffee Shop
22	San Blas-Canillejas	Seafood Restaurant	Metro Station	Park	Playground	Gym	Soccer Field	Supermarket	Restaurant	Discount Store	Electronics Store
23	Spandau	Clothing Store	Drugstore	Mobile Phone Shop	Pub	Doner Restaurant	Restaurant	Italian Restaurant	Café	Bakery	Fast Food Restaurant
24	Steglitz-Zehlendorf	Italian Restaurant	Bus Stop	Zoo Exhibit	Dive Bar	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant	Drugstore	
25	Tempelhof-Schoeneberg	Pet Store	Grocery Store	Motorcycle Shop	Supermarket	Furniture / Home Store	Brewery	Industrial Estate	Beer Bar	Climbing Gym	Cupcake Shop
26	Tetuan	Spanish Restaurant	Restaurant	Chinese Restaurant	Coffee Shop	Brewery	Brazilian Restaurant	Grocery Store	Gym	Farmers Market	Motorcycle Shop
27	Treptow-Koepenick	Lake	Beach	Zoo Exhibit	Farmers Market	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant	Drugstore	Donut Shop
28	Usera	Seafood Restaurant	BBQ Joint	Restaurant	Fast Food Restaurant	Bubble Tea Shop	Pool	Gastropub	Plaza	Theater	Spanish Restaurant
29	Vicalvaro	Mediterranean Restaurant	Auto Workshop	Zoo Exhibit	Dive Bar	Farmers Market	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant	Drugstore
30	Villaverde	Restaurant	Arcade	Spanish Restaurant	Café	Breakfast Spot	Zoo Exhibit	Falafel Restaurant	Exhibit	Electronics Store	Dumpling Restaurant

Madrid

Berlin

Clusters Map

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Word Cloud for Berlin

Word Cloud for Madrid

Discussion

Berlin is a very large city and the capital of Germany. It is home to the vast majority of the country's population. It is also notable for the concentration of companies located in the city. It is normal for a city of this size to offer many services to the population. Many of them are not directly related to tourism but can be an attraction.

For example, the offer in restaurants and coffee shops is very high, responding to the demand of the local population and not only to tourism.

Otherwise Madrid is more fragmented and splitted in more areas than Berlin. Madrid has fewer habitants than Berlin but receives more visitors.

Conclusion

Restaurants and shopping (Flea Markets) are the commun attractives in the City. Followed by Exhibitions and Museums. We could say the the offer of services for tourists is quite extensive. One of the most interesting topics in Berlin are related with gastronomy. The activities related with shopping are more frequently in Berlin than Madrid. It has a significant weight of exhibitions and cultural activities as museum and Zoos.

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The main activity in Madrid are restaurants and tapas Bar. The main of the services in all the areas are related with the gastronomy. It mean there is a high quantity of this kind of services than in Berlin.