

EU & UK NEIGHBORHOODS ANALYSIS

Introduction

Description & Discussion of the Background

After much delay, The United Kingdom formally left the EU on 31 January 2020, following on a public vote held in June 2016. Members of Parliament have voted 358 to 234 in favor of the Withdrawal Agreement Bill to approve Boris Johnson's Brexit deal.

The EU is an economic and political union involving 27 European countries. It allows free trade, which means goods can move between member countries without any checks or extra charges. The EU also allows free movement of people, to live and work in whichever country they choose. The UK joined in 1973 (when it was known as the European Economic Community) and became the first member state to leave.

Given this imminent exit, businesses and people have already started making plans to relocate from their current locations in UK, back to a suitable place in EU. Multiple socio-economic and political factors influence the selection of suitable relocation of a city. Ideally people would like to relocate to a city that offers similar kinds of public amenities and lifestyle as their city of origin.

We will therefore try to find cities in the EU that match the character of major cities in the UK. The results of this analysis can be used as a guide to those who are looking to relocate from UK to EU.

Data Acquisition & Cleaning

- List of cities in EU dataset scraped from https://en.wikipedia.org/wiki/List_of_cities_in_the_European_Union_by_population_within_city_limits
- List of cities in UK dataset scraped from https://en.wikipedia.org/wiki/List_of_cities_in_the_United_Kingdom
- In total, 112 rows and 13 features in the raw dataset.
- Cleaned data contains 64 rows and 3 features (City, Member State, Official Population).
- Number of EU cities are 53 and UK cities are 11.

Methodology

- Cleaned Dataset contains a total of 64 cities with more than half million population.
- The venues pulled using Foursquare have a total of 361 unique venue types.
- The top 5 most common venues are hotel, cafe, coffee shop, plaza and park.
- Ranked according to the frequency of occurrence of a venue type in each city
- Final dataset contains the top 10 most occurring venue types for each of 64 cities.
- 64 cities clustered by the similarity of venues in them.
- K-means clustering algorithm used to classify cities into similar clusters where $k=11$.

Analysis

Cluster 0

	City	Member State	Cluster Labels	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	Berlin	Germany	0	Coffee Shop	Park	Bookstore	Ice Cream Shop	Café	Bakery	Hotel	Wine Bar	Monument / Landmark	Gourmet Shop
6	Hamburg	Germany	0	Hotel	Café	Coffee Shop	Park	Vietnamese Restaurant	Cocktail Bar	Pizza Place	Theater	Steakhouse	Bookstore
8	Budapest	Hungary	0	Coffee Shop	Bakery	Pizza Place	Ice Cream Shop	Hotel	Dessert Shop	Italian Restaurant	Café	Park	Indie Movie Theater
11	Milan	Italy	0	Hotel	Plaza	Ice Cream Shop	Monument / Landmark	Pizza Place	Boutique	Cocktail Bar	Italian Restaurant	Café	Hostel
12	Prague	Czech Republic	0	Hotel	Park	Café	Ice Cream Shop	Coffee Shop	Burger Joint	Yoga Studio	Scenic Lookout	Garden	Indie Movie Theater
18	Amsterdam	Netherlands	0	Hotel	Coffee Shop	Cocktail Bar	Yoga Studio	Bar	Plaza	Breakfast Spot	Café	Indie Movie Theater	Restaurant
23	Kraków	Poland	0	Hotel	Café	Plaza	Park	Bar	Ice Cream Shop	Beer Bar	Bakery	Italian Restaurant	Cocktail Bar
43	Vilnius	Lithuania	0	Hotel	Coffee Shop	Café	Scenic Lookout	Wine Bar	Bar	Gym	Dessert Shop	Cocktail Bar	Plaza
52	Lisbon	Portugal	0	Plaza	Portuguese Restaurant	Scenic Lookout	Vegetarian / Vegan Restaurant	Hotel	Garden	Ice Cream Shop	Restaurant	Pizza Place	Café

Findings:

- 'Cluster 0' do not have any city from UK

Analysis

Cluster I

	City	Member State	Cluster Labels	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
13	Sofia	Bulgaria	1	Park	Bakery	Cocktail Bar	Coffee Shop	Restaurant	Vegetarian / Vegan Restaurant	Theater	Ice Cream Shop	Bar	Italian Restaurant
21	Copenhagen	Denmark	1	Coffee Shop	Beer Bar	Café	Park	Bakery	Wine Bar	Scandinavian Restaurant	Breakfast Spot	Cocktail Bar	Wine Shop
46	The Hague	Netherlands	1	Park	Bar	Café	Restaurant	Coffee Shop	Breakfast Spot	Italian Restaurant	Sandwich Place	Seafood Restaurant	Theater
56	Dundee	Scotland	1	Park	Café	Hotel	Coffee Shop	Beach	Golf Course	Restaurant	Bar	Fish & Chips Shop	Pub

Findings:

- 'Cluster 1' has **1** city from UK similar with cities from EU
- Relocation in EU is **possible**

Analysis

Cluster 2

	City	Member State	Cluster Labels	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
16	Naples	Italy	2	Pizza Place	Plaza	Café	Italian Restaurant	Ice Cream Shop	Historic Site	Hotel	Wine Bar	Park	Bar
29	Palermo	Italy	2	Italian Restaurant	Ice Cream Shop	Pizza Place	Historic Site	Café	Bar	Plaza	Mediterranean Restaurant	Park	Beach
40	Genoa	Italy	2	Italian Restaurant	Pizza Place	Plaza	Ice Cream Shop	Hotel	Beach	Historic Site	Bar	Bakery	Scenic Lookout

Findings:

- 'Cluster 2' do not have any city from UK

Analysis

Cluster 3

	City	Member State	Cluster Labels	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
3	Bucharest	Romania	3	Coffee Shop	Dessert Shop	Hotel	Park	Café	Burger Joint	Tea Room	Bar	Pizza Place	Beer Garden
60	Manchester	England	3	Pub	Coffee Shop	Hotel	Beer Bar	Pizza Place	Indian Restaurant	Café	Restaurant	Tapas Restaurant	Soccer Stadium
63	Stirling	Scotland	3	Coffee Shop	Pub	Supermarket	Italian Restaurant	Hotel	Café	Gastropub	Park	Bar	Indian Restaurant

Findings:

- 'Cluster 3' has **2** cities from UK similar with city from EU
- Relocation in EU is **possible**

Analysis

Cluster 4

	City	Member State	Cluster Labels	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
20	Zagreb	Croatia	4	Café	Bar	Plaza	Restaurant	BBQ Joint	Dessert Shop	Hotel	Coffee Shop	Bistro	Pub
61	Perth	Scotland	4	Café	Bar	Coffee Shop	Restaurant	American Restaurant	Park	French Restaurant	Movie Theater	Hotel	Palace

Findings:

- 'Cluster 4' has **1** city from UK similar with city from EU
- Relocation in EU is possible

Analysis

Cluster 5

	City	Member State	Cluster Labels	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
1	Madrid	Spain	5	Plaza	Spanish Restaurant	Hotel	Restaurant	Art Museum	Coffee Shop	Tapas Restaurant	Park	Ice Cream Shop	Monument / Landmark
9	Barcelona	Spain	5	Tapas Restaurant	Hotel	Coffee Shop	Plaza	Bookstore	Ice Cream Shop	Pizza Place	Cocktail Bar	Spanish Restaurant	Spa
22	Valencia	Spain	5	Hotel	Tapas Restaurant	Park	Plaza	Aquarium	Garden	Paella Restaurant	Ice Cream Shop	Café	Spanish Restaurant
25	Seville	Spain	5	Tapas Restaurant	Spanish Restaurant	Plaza	Hotel	Mediterranean Restaurant	Restaurant	Ice Cream Shop	Monument / Landmark	Winery	Museum
27	Zaragoza	Spain	5	Tapas Restaurant	Restaurant	Hotel	Spanish Restaurant	Plaza	Bar	Brewery	Coffee Shop	Park	Burger Joint
41	Málaga	Spain	5	Hotel	Café	Plaza	Tapas Restaurant	Art Museum	Beach	Park	Beer Bar	Coffee Shop	Ice Cream Shop

Findings:

- 'Cluster 5' do not have any city from UK

Analysis

Cluster 6

	City	Member State	Cluster Labels	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
45	Dublin	Ireland	6	Café	Pub	Coffee Shop	Park	Restaurant	Plaza	Hotel	Brewery	Gastropub	Soccer Stadium
54	Birmingham	England	6	Pub	Bar	Coffee Shop	Indian Restaurant	Park	Department Store	Beer Bar	Shopping Mall	Cocktail Bar	Italian Restaurant
55	Bradford	England	6	Pub	Bar	Coffee Shop	Park	Beer Bar	Indian Restaurant	Brewery	Italian Restaurant	Café	Restaurant
62	Sheffield	England	6	Pub	Park	Coffee Shop	Café	Bar	Bakery	Climbing Gym	Beer Store	Theater	Grocery Store

Findings:

- 'Cluster 6' has **3** cities from UK similar with city from EU
- Relocation in EU is **possible**

Analysis

Cluster 7

	City	Member State	Cluster Labels	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
4	Paris	France	7	Plaza	Hotel	Wine Bar	Bookstore	Cocktail Bar	Ice Cream Shop	Bakery	Italian Restaurant	Art Museum	Historic Site
5	Vienna	Austria	7	Austrian Restaurant	Plaza	Hotel	Ice Cream Shop	Park	Restaurant	Italian Restaurant	Art Museum	Café	Bar
19	Marseille	France	7	French Restaurant	Hotel	Plaza	Bar	Provençal Restaurant	Historic Site	Park	Church	Italian Restaurant	Coffee Shop
51	Lyon	France	7	Bar	Plaza	French Restaurant	Lyonese Bouchon	Café	Cocktail Bar	Historic Site	Church	Burger Joint	Garden

Findings:

- 'Cluster 7' do not have any city from UK

Analysis

Cluster 8

	City	Member State	Cluster Labels	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
2	Rome	Italy	8	Plaza	Historic Site	Monument / Landmark	Ice Cream Shop	Italian Restaurant	Church	Sandwich Place	Fountain	Pizza Place	Hotel
17	Turin	Italy	8	Plaza	Ice Cream Shop	Piedmontese Restaurant	Historic Site	Pizza Place	Café	Hotel	Japanese Restaurant	Park	Monument / Landmark

Findings:

- 'Cluster 8' do not have any city from UK

Analysis

Cluster 9

	City	Member State	Cluster Labels	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
7	Warsaw	Poland	9	Park	Cocktail Bar	Café	Hotel	Vegetarian / Vegan Restaurant	Coffee Shop	Polish Restaurant	Plaza	Beer Bar	Ice Cream Shop
10	Munich	Germany	9	Café	Plaza	German Restaurant	Hotel	Cocktail Bar	Ice Cream Shop	Beer Garden	Italian Restaurant	Coffee Shop	Beach
14	Cologne	Germany	9	Park	Café	Hotel	Coffee Shop	Pedestrian Plaza	Scenic Lookout	Plaza	Italian Restaurant	Ice Cream Shop	Burger Joint
15	Stockholm	Sweden	9	Scandinavian Restaurant	Café	Hotel	Park	Bakery	Bookstore	Coffee Shop	Falafel Restaurant	Cocktail Bar	Plaza
24	Frankfurt	Germany	9	Café	Hotel	Park	Japanese Restaurant	Coffee Shop	Bar	Italian Restaurant	Art Museum	Ice Cream Shop	Plaza
26	Łódź	Poland	9	Hotel	Park	Coffee Shop	Italian Restaurant	Café	Bar	Theater	Restaurant	Pub	Performing Arts Venue
31	Helsinki	Finland	9	Coffee Shop	Scandinavian Restaurant	Café	Park	Hotel	French Restaurant	Art Museum	Restaurant	Asian Restaurant	Music Venue
32	Wrocław	Poland	9	Café	Park	Ice Cream Shop	Hotel	Beer Bar	Pizza Place	Pub	Bar	Coffee Shop	Vegetarian / Vegan Restaurant
33	Stuttgart	Germany	9	Bar	Park	Café	Ice Cream Shop	German Restaurant	Cocktail Bar	Italian Restaurant	Plaza	Japanese Restaurant	Scenic Lookout
34	Riga	Latvia	9	Park	Bar	Plaza	Hotel	Eastern European Restaurant	Restaurant	Beer Store	Gym	Wine Bar	Spa
35	Düsseldorf	Germany	9	Hotel	Japanese Restaurant	Café	Park	Bar	Pizza Place	Coffee Shop	Grocery Store	Plaza	Brewery
36	Leipzig	Germany	9	Café	Zoo Exhibit	Hotel	Park	Restaurant	Pub	Concert Hall	Plaza	German Restaurant	Museum
37	Dortmund	Germany	9	Café	Italian Restaurant	Park	Hotel	Plaza	Soccer Stadium	Ice Cream Shop	Burger Joint	Turkish Restaurant	Coffee Shop
38	Essen	Germany	9	Café	Ice Cream Shop	Italian Restaurant	Burger Joint	Pub	Hotel	German Restaurant	History Museum	Historic Site	Park

Analysis

Cluster 9 (contd.)

39	Gothenburg	Sweden	9	Pub	Coffee Shop	Café	Scandinavian Restaurant	Burger Joint	Hotel	Bar	Ice Cream Shop	Theme Park Ride / Attraction	Italian Restaurant
42	Bremen	Germany	9	Hotel	Café	Italian Restaurant	Bar	German Restaurant	Park	Plaza	Bakery	Market	Pub
44	Dresden	Germany	9	Hotel	German Restaurant	Plaza	Park	Bakery	Historic Site	Art Gallery	Vegetarian / Vegan Restaurant	Café	Museum
47	Hanover	Germany	9	Café	Coffee Shop	Burger Joint	Beer Garden	Pizza Place	Park	Bakery	Vietnamese Restaurant	Turkish Restaurant	Zoo Exhibit
48	Poznań	Poland	9	Café	Park	Restaurant	Coffee Shop	Polish Restaurant	Italian Restaurant	Hotel	Breakfast Spot	Beer Bar	Bakery
50	Nuremberg	Germany	9	Café	Hotel	Burger Joint	Coffee Shop	History Museum	Park	Bakery	Pizza Place	Plaza	Turkish Restaurant
57	Edinburgh	Scotland	9	Café	Hotel	Park	Coffee Shop	Pub	Beer Bar	Restaurant	Cocktail Bar	Bar	Gastropub

Findings:

- 'Cluster 9' has **1** city from UK similar with cities from EU
- Relocation in EU is **possible**

Analysis

Cluster 10

	City	Member State	Cluster Labels	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
28	Athens	Greece	10	Café	Coffee Shop	Historic Site	Bar	Hotel	Wine Bar	Meze Restaurant	History Museum	Boutique	Park
30	Rotterdam	Netherlands	10	Hotel	Bar	Coffee Shop	Café	Ice Cream Shop	Park	Vegetarian / Vegan Restaurant	French Restaurant	Sandwich Place	Bakery
49	Antwerp	Belgium	10	Coffee Shop	Cocktail Bar	Bar	Italian Restaurant	Restaurant	French Restaurant	Plaza	Clothing Store	Asian Restaurant	Seafood Restaurant
53	Aberdeen	Scotland	10	Bar	Beer Bar	Hotel	Beach	Coffee Shop	Restaurant	Café	Park	Department Store	Seafood Restaurant
58	Glasgow	Scotland	10	Bar	Coffee Shop	Italian Restaurant	Café	Park	Indian Restaurant	Cocktail Bar	Pizza Place	Hotel	Beer Bar
59	Leeds	England	10	Bar	Coffee Shop	Pub	Café	Italian Restaurant	Cocktail Bar	Beer Bar	Shopping Mall	Thai Restaurant	Park

Findings:

- 'Cluster 10' has **3** cities from UK similar with cities from EU
- Relocation in EU is **possible**

Results & Discussion

- Out of the 11 cluster of cities, 5 clusters (Cluster 0, 2, 5, 7, 8) do not have any city from UK.
- 6 clusters (Cluster 1, 3, 4, 6, 9, 10) have cities from UK similar with cities of EU.
- For every 11 big cities in UK, EU has alternate locations.
- Multiple cities of EU can be considered by people or businesses looking to relocate in EU.

Conclusion

- EU has similar cities for every big UK cities based on the characteristics of public venues, cultural sites, eating places and lifestyle.
- Relocation can be done by businesses and people if they wish.
- People and businesses still can achieve better outcomes by relocation in EU.