

INTRODUCTION AND BUSINESS PROBLEM

Introduction

The city of Lagos is the most populous state in Nigeria and one of the fastest growing cities in the world. It is divided into two main geographical areas – the island and the mainland. Victoria Island, the business and financial centre of Lagos is located on the island. It is also one of the most expensive and exclusive areas to reside in Lagos. Victoria Island is packed with offices, restaurants, hotels and night life. For people that are new to Lagos and staying in Victoria Island, it can be daunting to figure out what restaurants are worth going to and where they are.

Business Problem

For this project, I am going to create a simple guide on where to eat based on Foursquare likes, restaurant category and geographic location data for restaurants in Victoria Island. I will then cluster these restaurants based on their similarities so that a user can easily determine what type of restaurants are best to eat at based on Foursquare user feedback.

DATA REQUIREMENTS AND METHODOLOGY

Data Requirements

For this project, I will be utilizing the Foursquare API to pull the following location data on restaurants in Victoria Island:

- Venue Name
- Venue ID
- Venue Location
- Venue Category
- Count of Likes

Data Acquisition Approach

To acquire the data mentioned above, I will do the following:

- Get geolocator latitude and longitude coordinates for Victoria Island, Lagos
- Use Foursquare API to get a list of all venues in Victoria Island
 - Get venue name, venue ID, location, category, and likes

Methodology

The thought process behind this is that likes are a proxy for quality. The more likes there are, the better the restaurant is. This might be incorrect but API call issues (how many I can use for free) hold me back from getting price / rating data. I will then bin this data into quality categorical variables so we can cluster appropriately.

I am also going to create new categorical variables for the restaurants to better group them based on type of cuisine.

I will take the gathered data (see above in Data Acquisition Approach and Data Required sections) and will create a k-means clustering algorithm that groups restaurants into 4-5 clusters so that people looking to eat in Victoria Island can easily see which restaurants are the best to eat at, what cuisine is available and where they can look to eat.

RESULTS

Running my clustering algorithm, I was able to generate four clusters of restaurants. These are as follows:

Cluster 1

- Characteristics
 - Poor quality food
 - Mostly asian food or other

	name	id	categories	lat	lng	total likes	total likes_cat	categories_new	label
71	De Marquee	4c73aa961b1199c4c316113	Cocktail Bar	6.433480	3.420338	5	poor	bars	0
41	Movida	4c411614da3dc9287177c8b9	Nightclub	6.433297	3.427134	7	poor	bars	0
44	Ntyce Lagos	50317602e4b0260c92dd90d	Lounge	6.427462	3.425514	8	poor	bars	0
74	Eric Kayser	5bedd776446ea6002c2b01ca	Bistro	6.434303	3.431837	3	poor	italian european food	0
70	1415 Fine Dining Italian Restaurant, Eko Signa...	546cf4dd498eef03ca0fbd61	Italian Restaurant	6.427218	3.430452	5	poor	italian european food	0
27	Sabor	5a5a4de835811b435b45d739	Restaurant	6.433263	3.429472	7	poor	local food	0
58	KFC	4e6f115d8998fd5c56738b48	Fast Food Restaurant	6.429315	3.422802	8	poor	local food	0
60	TFC Place	4c49b1083013a593b00316e3	Fast Food Restaurant	6.429441	3.426251	6	poor	local food	0
59	Bonzai	4d9b62b3335ab60cf1a3f9f9	Japanese Restaurant	6.425726	3.424112	6	poor	mediterranean asian food	0
62	Marcopolo	4f992121e4b0bda88800acff	Chinese Restaurant	6.426926	3.425577	3	poor	mediterranean asian food	0
65	Façade	50dc924fe4b06582796727fd	Thai Restaurant	6.434217	3.432328	7	poor	mediterranean asian food	0
67	Prime Chinese	4c3ca3ec7d00d13a9e303950	Chinese Restaurant	6.434639	3.431360	4	poor	mediterranean asian food	0
43	Soho Restaurant	52829c4a11d20800b639f33e	Asian Restaurant	6.435061	3.422925	8	poor	mediterranean asian food	0
73	Red	5607df37498e48b2561a6eb5	Chinese Restaurant	6.425968	3.430618	2	poor	mediterranean asian food	0
50	Orchid House Thai	59d3a000e1f0aa5b08be3f08	Thai Restaurant	6.428568	3.432894	6	poor	mediterranean asian food	0
45	Hotel Bon Voyage	4df4c5bd52b100c2d7ff063b	Hotel	6.426448	3.434136	5	poor	other	0
75	BNatural Spa, VI	51cf1c22498e7eb23ee6538b	Spa	6.429378	3.417801	6	poor	other	0
66	Beni Apartments	4d4d76dffe7b1f7b27e5c42	Hotel	6.436087	3.428309	3	poor	other	0
39	Brown's Cafe	4fd4d2e0e4b0a071e1ce3f70	Café	6.430560	3.421827	8	poor	other	0
72	Poolside	4f93f57ae4b0cd2d53f9ef9e	Pool	6.426079	3.430414	3	poor	other	0
37	Chesney Hotel	4f414bd6e4b0740e7bac80e2	Hotel	6.427591	3.422369	7	poor	other	0
76	Beni Gold Hotel	559d4379498e0afcf93dda20	Hotel	6.434185	3.418700	2	poor	other	0

Cluster 2

- Characteristics
 - Below average quality food
 - Mostly asian inspired food

	name	id	categories	lat	lng	total likes	total likes_cat	categories_new	label
36	Talindos Steak house	4e40381a2271d21e8719951c	Steakhouse	6.426402	3.425435	11	below avg	american mexican food	1
35	Aura	4c532b4af5f3d313a0c120cf8	Nightclub	6.427092	3.429263	9	below avg	bars	1
63	Kudeta Lounge	52a353d311d278ee3e915806	Lounge	6.433468	3.420406	10	below avg	bars	1
25	SS Lounge	4cd4b2f4ab19a0930f153beb	Lounge	6.434328	3.421782	13	below avg	bars	1
47	Bar Campione	4f81b369e4b050ced70267c4	Italian Restaurant	6.425561	3.422309	11	below avg	italian european food	1
68	Milano Restaurant	51ef0365e4b05e2658f4b565	Italian Restaurant	6.434910	3.422778	10	below avg	italian european food	1
21	L'afrique Restaurant & Bar	5008503ee4b0dfac2d5bff63	African Restaurant	6.431256	3.429089	13	below avg	local food	1
22	Viceroy Restaurant	4f81f717e4b0fc8b19f979f6	Indian Restaurant	6.427469	3.423786	12	below avg	mediterranean asian food	1
31	Coral Blue	5121093de4b0a441016a5095	Seafood Restaurant	6.431368	3.424532	10	below avg	mediterranean asian food	1
20	Craft Gourmet	56caf22d498e9ce2cbd69ad0	Mediterranean Restaurant	6.433277	3.420752	11	below avg	mediterranean asian food	1
56	Bangkok Restaurant	4e1b295045ddf3d243738cb3	Thai Restaurant	6.431866	3.434827	12	below avg	mediterranean asian food	1
24	Jade Palace	4cc966a5e7926dcb6a105c77	Chinese Restaurant	6.429887	3.421019	10	below avg	mediterranean asian food	1
38	Protea Hotel	4d59710356f12b60ccb3d792f	Hotel	6.430492	3.429438	9	below avg	other	1
16	Caffe Tranche	4eabd7ae6da1cafdae8028d6	Café	6.427724	3.425859	13	below avg	other	1
54	Cafe Vanessa	50d07038e4b09146b4947f4a	Café	6.429704	3.418609	9	below avg	other	1
57	Bar Beach	4c77bcd007818cfa4152d5e3	Beach	6.422849	3.424350	10	below avg	other	1
14	My coffee	575c169f498ec53272a147b9	Café	6.434083	3.430224	10	below avg	other	1

Cluster 3

- Characteristics
 - High quality food
 - Mostly take out foods and fine dining restaurants.

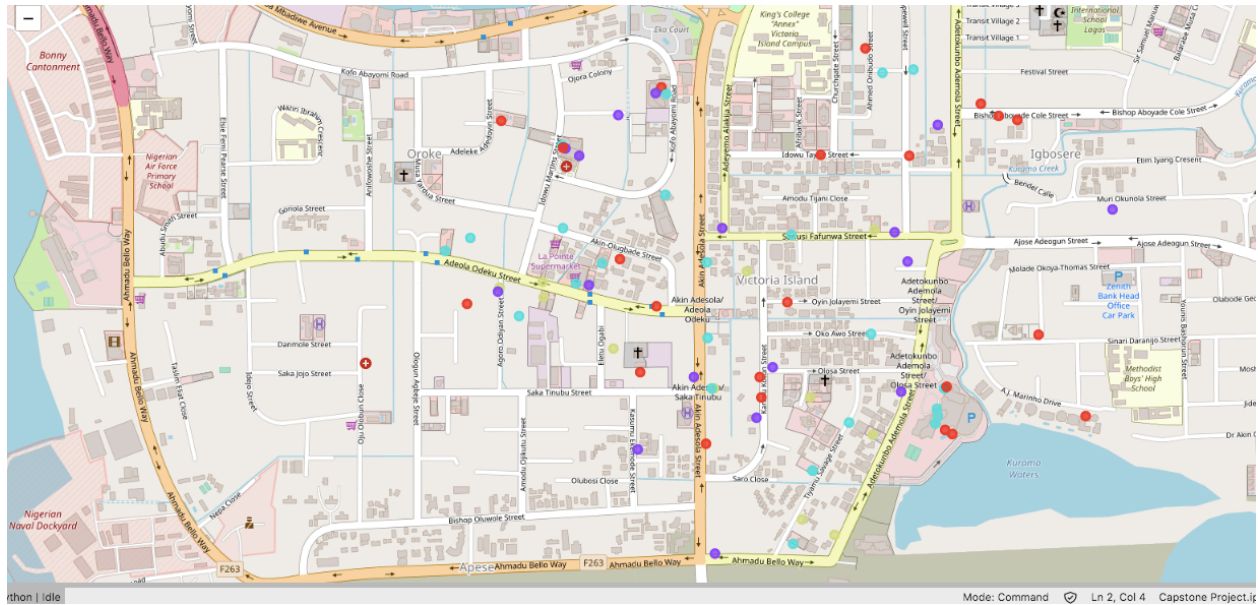
	name	id	categories	lat	lng	total likes	total likes_cat	categories_new	label
8	Crossroads	55fb140d498eb46117541a06	Mexican Restaurant	6.426633	3.430207	14	avg avg	american mexican food	2
2	355 Restaurant & Lounge	52d0759f498e2a73b7ab5ef7	Lounge	6.428589	3.428468	21	avg avg	bars	2
53	Escape	534adcdd498ebdd3b463fb3c	Nightclub	6.431124	3.417887	20	avg avg	bars	2
61	Sky Lounge Eko Hotel	5144c57be4b087df7a15725a	Cocktail Bar	6.426262	3.430154	17	avg avg	bars	2
46	Bistro 7	4fa2e2e3e4b0e8e3878f6c9c	Italian Restaurant	6.432234	3.423042	26	avg avg	italian european food	2
10	Terra Kulture	4c112e99f1b6a5938d1a7d27	Restaurant	6.425012	3.426917	30	avg avg	local food	2
26	Nok by Alara	567c3a8c498e4bd360eacbc7	African Restaurant	6.430458	3.421360	20	avg avg	local food	2
34	Jevenik Restaurant	4dade258f7b17488f4862317	African Restaurant	6.429070	3.419177	30	avg avg	local food	2
55	Pearl Garden	51054414e4b0f8922c7b4fc4	Chinese Restaurant	6.426282	3.427893	15	avg avg	mediterranean asian food	2
51	Pattaya Restaurant	4cae280a1168a09370071823	Thai Restaurant	6.435524	3.429574	16	avg avg	mediterranean asian food	2
0	Cafe Neo at fourteen36	56ab7d27498e3b4bd008d6b2	Café	6.431200	3.426356	14	avg avg	other	2
49	Intercontinental Lagos	51e18df5498e65d882a0d03c	Resort	6.434882	3.423059	92	great	other	2
42	Avenue Suites	50118bb1e4b01bcd107711c	Resort	6.423107	3.426409	19	avg avg	other	2
40	Park n Shop	4c93b0df38dd8cfa909c262	Shopping Mall	6.429930	3.420666	70	great	other	2
30	Muri Okunola Park	4fdded4ee4b0e07803798e4f	Park	6.437607	3.425089	17	avg avg	other	2
32	Ice Cream Factory	4c3b347a16cb2d7f9d6f02a9	Dessert Shop	6.435452	3.428755	42	great	other	2
29	Eko Hotels and Suites	4c4c15cb42bd4d13ace00947f	Hotel	6.426450	3.430214	147	great	other	2
23	Mega Plaza	4bbf335298f49521c638d263	Department Store	6.433547	3.420304	135	great	other	2
15	Terra Kulture	51a5d221498e1eb59a79c54a	Theater	6.425012	3.426923	54	great	other	2
13	Delis	56226115498e8bba5a0dadf4	Café	6.430468	3.424126	17	avg avg	other	2
11	The homestores (Art Cafe)	530c7fc4498ee69cc24966f5	Art Gallery	6.431375	3.420336	42	great	other	2
9	Cafe Neo	51603e25498eedc7cc86aa2b	Café	6.428494	3.424145	24	avg avg	other	2
7	Eko Hotel Signature	5298c50a11d24998ec1e70e8	Hotel	6.427168	3.430402	16	avg avg	other	2
33	HUB MART	56d8398b498e3d98a6a55ff9	Market	6.430772	3.417214	26	avg avg	other	2
64	Paris Deli	4dceffae52b1f8915ba444bc	Café	6.427168	3.424266	19	avg avg	other	2

Cluster 4

- Characteristics
 - Above average quality food
 - Mostly bars and fancy restaurants.

	name	id	categories	lat	lng	total likes	total likes_cat	categories_new	label
3	Bottles	4c8968931eafb1f736507135	Mexican Restaurant	6.426929	3.426862	66	great	american mexican food	3
18	Johnny Rockets	50c9e480e4b0d44e4818c5b3	Burger Joint	6.423335	3.427493	72	great	american mexican food	3
1	Shaunz Bar and lounge	4f63a0bbe4b02ac2c446daec	Karaoke Bar	6.431337	3.428540	53	great	bars	3
5	Bungalows Restaurant	4c4776901ddc928a86e9d32	Pub	6.430247	3.425182	55	great	bars	3
12	Maison Fahrenheit	548f3105498ed35b87650aac	Nightclub	6.425953	3.428512	52	great	bars	3
48	Sip Bar	4f9b306de4b0027bd3f7781d	Nightclub	6.427168	3.424327	43	great	bars	3
17	Casper & Gambini's	5683d5b3498eecea1d51be8e	Modern European Restaurant	6.429813	3.418668	39	great	italian european food	3
28	Debonairs pizza	4c6275ac58810f470c32071e	Pizza Place	6.429953	3.419802	36	great	italian european food	3
4	R.S.V.P	54836830498ebb1006e510ad	Restaurant	6.428207	3.421662	46	great	local food	3
6	Spice Route	523f0417498e057b85aea83c	Asian Restaurant	6.429557	3.419823	101	great	mediterranean asian food	3
19	Ocean Basket	505632c4e4b0e7ceb78b1499	Seafood Restaurant	6.423736	3.426631	78	great	mediterranean asian food	3

Map of Clusters for Users



OBSERVATIONS

- There are more Mediterranean/Asian foods in Victoria Island, however, about 85% of them appear to have lesser likes amongst foursquare users.
- Delis and fine dining restaurants are a favorite amongst foursquare users.