Data Science Capstone Project.

Shanghai, Beijing, Hongkong, which city would you like to visit?

What are the top 10 categories of most popular venues in each city?

How can we get the data about these cities?

How to use the data to find out the answers of the above questions?

Got confused about these questions. Let us use data Science technologies to resolve them. This project is to provide the tourists the useful information for them to decide which city they more like to visit and where they can visit when they are in the city.

To get the useful information, the project calls Foursquare API to get location data for the popular venues with detail name, category, latitude and longitude of each venue. Then use pandas dataframe to analyze the venues to get the top popular categories, and use folium to mark the venues of the top categories in the city map.

Due to the limit of Foursquare API, only 100 venues returned for each location, so the project only use the location data of the downtown area of each city to demonstrate the solution.

Shanghai

The most popular 10 categories of the downtown venues and the count of venues in that category:

Hotel	12
Coffee Shop	8
Café	5
Chinese Restaurant	5
Fast Food Restaurant	3
Indian Restaurant	3
Park	3
Art Museum	3
Lounge	3
Hotel Bar	2

The venues in downtown belong to the top 10 category:

	name	categories	lat	lng
0	JW Marriott Hotel Shanghai at Tomorrow Square ...	Hotel	31.232216	121.465260
1	People's Park (人民公园)	Park	31.234009	121.467703

2	Shanghai Museum (上海博物馆)	Art Museum	31.230427	121.470898
3	Shanghai Art Museum (上海美术馆)	Art Museum	31.232784	121.466496
4	Barbarossa	Lounge	31.233322	121.467179
5	The Yangtze Boutique Hotel (扬子精品酒店)	Hotel	31.235331	121.472178
6	Le Royal Club Lounge	Lounge	31.236404	121.471364
7	Starbucks (星巴克)	Coffee Shop	31.235657	121.467884
8	Le Royal Méridien Shanghai (上海世茂皇家艾美酒店)	Hotel	31.236171	121.471357
9	Lobby Bar @ 38th floor - JW Marriott	Hotel Bar	31.232421	121.465553
10	Yanzhong Square Park (延中绿地广场公园)	Park	31.227089	121.469700
11	Starbucks (星巴克)	Coffee Shop	31.233746	121.466210
12	Radisson Blu Hotel Shanghai New World (新世界丽笙酒店) Hotel		31.236693	121.468239
13	Marriott Café	Café	31.232267	121.465238
14	McCafé	Coffee Shop	31.235151	121.469725
15	Carl's Jr. (卡乐星)	Fast Food Restaurant	31.234454	121.471828
16	Shanghai Marriott Hotel City Centre (上海雅居乐万豪酒店) Hotel		31.238401	121.468668
17	Starbucks (星巴克)	Coffee Shop	31.236656	121.469404
18	Ascott (雅诗阁)	Hotel	31.225628	121.470668
19	Kebabs On The Grille	Indian Restaurant	31.231450	121.466163
20	Burger King (汉堡王)	Fast Food Restaurant	31.236962	121.469218
21	Ocean Grounds	Café	31.225638	121.470083
22	Ps Café	Café	31.224881	121.469708
23	Nanjing Impressions (南京大牌档)	Chinese Restaurant	31.225592	121.470112
24	Starbucks (星巴克)	Coffee Shop	31.231884	121.475290
25	Little Bean	Coffee Shop	31.225107	121.469205
26	Starbucks (星巴克)	Coffee Shop	31.235444	121.470489
27	Campanile Hotel and Restaurant	Hotel	31.232123	121.479144
28	MoCA Shanghai (上海当代艺术馆)	Art Museum	31.233429	121.468115

29	Yang's Dumpling (小杨生煎)	Fast Food Restaurant	31.236549	121.466134
30	Seewant Café (囍旺咖啡)	Café	31.235339	121.474663
31	Le Royal Méridien Bar + Lounge	Lounge	31.236366	121.471356
32	新光酒家方亮蟹宴(黄浦店)	Chinese Restaurant	31.238028	121.472411
33	Sky Dome Bar	Hotel Bar	31.236794	121.468221
34	Grand Central Hotel Shanghai (上海大酒店)	Hotel	31.237379	121.476754
35	Fraser Residence Shanghai	Hotel	31.225639	121.476177
36	Man Ho Cantonese Restaurant	Chinese Restaurant	31.238432	121.468358
37	Masala Art	Indian Restaurant	31.227564	121.462142
38	Starbucks (星巴克)	Coffee Shop	31.239171	121.468951
39	The Sukhothai Shanghai (上海素凯泰酒店)	Hotel	31.230182	121.459757
40	Masala Desi	Indian Restaurant	31.227590	121.462092
41	Huaihai Park	Park	31.225767	121.472746
42	Park Hotel (国际饭店)	Hotel	31.235269	121.467097
43	新荣记	Chinese Restaurant	31.227368	121.473886
44	Eclair	Café	31.224209	121.471261
45	THE ONE Executive Suites managed by Kempinski	Hotel	31.234141	121.460037
46	蝶园 Butterfly Garden Restaurant	Chinese Restaurant	31.223707	121.472333

Mark the above venues in the map, different categories in different colors.
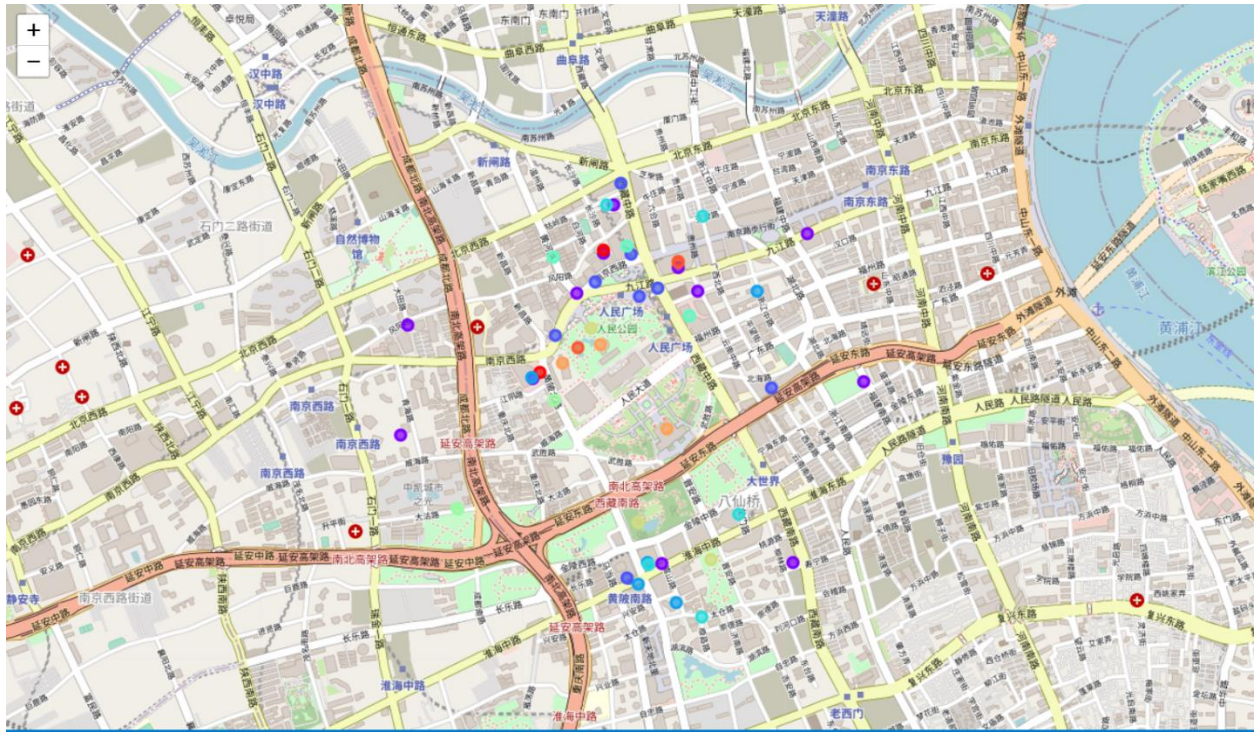
Beijing

The most popular 10 categories of the downtown venues and the count of venues in that category:

Historic Site	18
Hotel	11
Park	7
Café	6
Chinese Restaurant	4
Coffee Shop	4
Peking Duck Restaurant	3
Temple	3
Shopping Mall	3
Yunnan Restaurant	3

The venues in downtown belong to the top 10 category:

	name	categories	lat	lng
0	Tian'anmen Tower (天安门城楼)	Historic Site	39.906562	116.391582
1	Zhongshan Park (Zhongshan Park 中山公园)	Park	39.908765	116.388602
2	端门	Historic Site	39.908694	116.391192

3	Gate of Supreme Harmony (太和门)	Historic Site	39.913719	116.390880
4	Lost Heaven 花马天堂	Yunnan Restaurant	39.900272	116.395612
5	Hall of Supreme Harmony (太和殿)	Historic Site	39.915466	116.390862
6	Forbidden City (Palace Museum) (故宫（博物院）)	Historic Site	39.917702	116.390662
7	Hall of Preserving Harmony (保和殿)	Historic Site	39.916799	116.390809
8	Palace of Heavenly Purity (乾清宫)	Historic Site	39.918491	116.390637
9	New World Beijing Hotel (北京新世界酒店)	Hotel	39.897296	116.405923
10	Bian Yi Fang (便宜坊烤鸭店)	Peking Duck Restaurant	39.895075	116.394550
11	WF Central (王府中环)	Shopping Mall	39.910960	116.404725
12	Starbucks Reserve (星巴克甄选)	Coffee Shop	39.896581	116.390618
13	Hall of Central Harmony (中和殿)	Historic Site	39.916304	116.390747
14	Corner Tower (NE) (角楼 (东北))	Historic Site	39.921939	116.396024
15	Jingshan Park (景山公园)	Park	39.923536	116.390576
16	The Peninsula Beijing (王府半岛酒店)	Hotel	39.914167	116.410192
17	Wanchun Pavilion (万春亭)	Historic Site	39.923489	116.390420
18	Soloist Coffee Co.	Coffee Shop	39.894532	116.386791
19	Beijing Pie (河沿肉饼)	Chinese Restaurant	39.914572	116.400090
20	Hall of Union (交泰殿)	Historic Site	39.919028	116.390766
21	Beihai Park (北海公园)	Park	39.922079	116.383311
22	Waldorf Astoria Beijing	Hotel	39.914534	116.407721
23	Gate of Heavenly Purity (乾清门)	Historic Site	39.917989	116.390626
24	Grand Hyatt Beijing (北京东方君悦大酒店)	Hotel	39.908060	116.408349
25	Palace of Earthly Tranquility (坤宁宫)	Historic Site	39.919111	116.390660
26	Gate of Divine Might (神武门)	Historic Site	39.921316	116.390568
27	Legendale Hotel (北京励骏酒店)	Hotel	39.913920	116.412610
28	Hilton (北京王府井希尔顿酒店)	Hotel	39.912829	116.407267
29	Spoonful of Sugar Cafe	Café	39.892179	116.382838

30	Corner Tower (NW) (角楼（西北）)	Historic Site	39.921509	116.385363
31	Hall of Prayer for Good Harvests (祈年殿)	Temple	39.882131	116.406780
32	Temple of Heaven (天坛)	Temple	39.879899	116.402957
33	Duck de Chine (Duck de Chine 全鸭季)	Chinese Restaurant	39.913152	116.414793
34	Little Yunnan (小云南 Little Yunnan)	Yunnan Restaurant	39.925578	116.400493
35	North Gate: Temple of Heaven (天坛北门)	Park	39.886261	116.406326
36	Shichahai Park (什刹海公园 Shichahai Park)	Park	39.932446	116.385791
37	The Hulu Hotel	Hotel	39.919144	116.412430
38	Tiantan Park (天坛公园)	Park	39.882393	116.410747
39	Dadong Roast Duck Restaurant (大董烤鸭店)	Peking Duck Restaurant	39.914090	116.415031
40	Pentahotel Beijing	Hotel	39.897537	116.411604
41	JW Marriott Hotel Beijing Central (北京粤财 JW 万豪酒店)	Hotel	39.893906	116.369255
42	Berry Beans	Café	39.893059	116.386124
43	Zarah Café	Café	39.939389	116.399957
44	1901 Cafe	Café	39.921443	116.371888
45	Fasting Palace	Temple	39.878356	116.400885
46	Kellys Courtyard	Hotel	39.918500	116.364583
47	Starbucks (星巴克)	Coffee Shop	39.885145	116.413894
48	Voyage Coffee	Coffee Shop	39.940057	116.396797
49	Toast	Café	39.942048	116.393102
50	馅老满酒家 • Xian Lao Man	Chinese Restaurant	39.941672	116.402238
51	西单商场 Xidan Shopping Center	Shopping Mall	39.909171	116.368074
52	Circular Mound Altar (圜丘坛)	Historic Site	39.875602	116.406978
53	Summer Palace (夏宫)	Chinese Restaurant	39.909886	116.428780
54	Ritan Park (日坛公园)	Park	39.914493	116.438094
55	Ancient Chinese Observatory (北京古观象台 Ancient Ch...	Historic Site	39.906121	116.428602
56	Guozijian Imperial Academy (国子监)	Historic Site	39.944917	116.406970

57	The Orchid	Hotel	39.942083	116.393050
58	Dali Courtyard (大里院子)	Yunnan Restaurant	39.939983	116.398813
59	Parkview Green (侨福芳草地)	Shopping Mall	39.918193	116.443280
60	Dadong Roast Duck Restaurant (大董烤鸭店)	Peking Duck Restaurant	39.931008	116.425677
61	Alba	Café	39.939365	116.398351

Mark the above venues in the map, different categories in different colors.
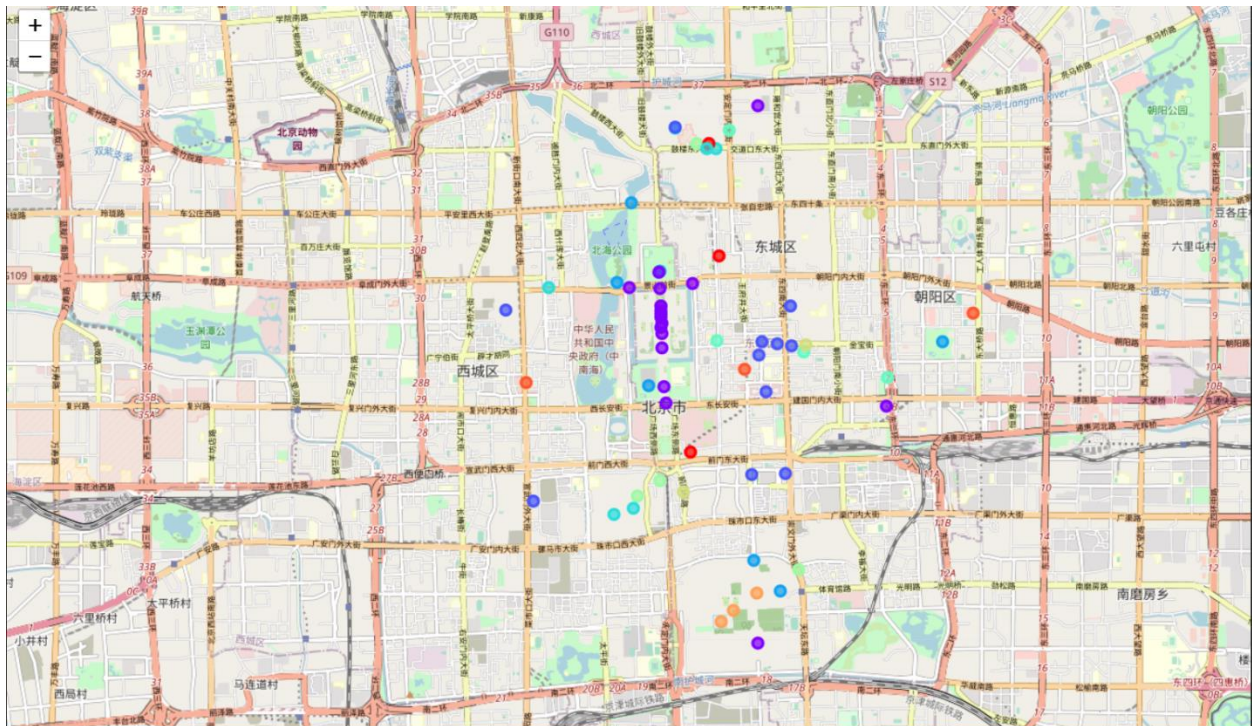
Hongkong

The most popular 10 categories of the downtown venues and the count of venues in that category:

Hotel	9
Café	6
Steakhouse	5
Italian Restaurant	5
Cantonese Restaurant	5
Yoga Studio	4
Bar	4
Japanese Restaurant	4
Chinese Restaurant	3

Clothing Store	3	

The venues in downtown belong to the top 10 category:

	name	categories	lat	lng
0	Ruth's Chris Steak House (茹絲葵牛排餐廳)	Steakhouse	22.279188	114.163833
1	The Murray Hong Kong (香港美利酒店)	Hotel	22.278127	114.160392
2	Island Shangri-La (港島香格里拉大酒店)	Hotel	22.277193	114.164310
3	Howard's Gourmet (好酒好蔡)	Chinese Restaurant	22.281469	114.161404
4	The Upper House (奕居)	Hotel	22.277499	114.166323
5	Pure Yoga	Yoga Studio	22.278106	114.164754
6	Lawry's The Prime Rib	Steakhouse	22.280859	114.162527
7	Café Gray Deluxe	Café	22.277506	114.166320
8	Mandarin Grill + Bar (文華扒房＋酒吧)	Steakhouse	22.281928	114.159408
9	Mandarin Oriental Hong Kong (香港文華東方酒店)	Hotel	22.281857	114.159382
10	JW Marriott Hotel Hong Kong (香港 JW 萬豪酒店)	Hotel	22.277509	114.166341
11	Conrad Hong Kong (香港港麗酒店)	Hotel	22.277031	114.165170
12	Flint	Steakhouse	22.277487	114.165750
13	Tien Yi Chinese Restaurant (天一酒家)	Cantonese Restaurant	22.277990	114.165901
14	JW Café (JW 咖啡室)	Café	22.277590	114.166660
15	Man Wah (文華廳)	Cantonese Restaurant	22.281993	114.159242
16	Fuel Espresso	Café	22.277671	114.166241
17	8½ Otto e Mezzo Bombana	Italian Restaurant	22.281726	114.158767
18	Zuma	Japanese Restaurant	22.280583	114.157857
19	Café Causette	Café	22.281921	114.159477
20	Ammo Restaurant & Bar	Italian Restaurant	22.276077	114.165293
21	China Tang (唐人館)	Chinese Restaurant	22.280539	114.157676
22	Kapok on Sun Street	Clothing Store	22.276838	114.168695

23	ON Dining Kitchen & Lounge	Bar	22.281027	114.156936
24	Dolce 88	Café	22.277937	114.166128
25	The Landmark Mandarin Oriental, Hong Kong (The...	Hotel	22.280518	114.157939
26	Maxim's Palace (美心皇宮)	Cantonese Restaurant	22.282554	114.161525
27	Pici	Italian Restaurant	22.276117	114.168987
28	Flex Studio Central	Yoga Studio	22.280431	114.156020
29	Fringe Club Roof Garden	Bar	22.280302	114.155958
30	Carbone	Italian Restaurant	22.280698	114.155441
31	Jouer Atelier	Café	22.275718	114.169589
32	Pure Yoga	Yoga Studio	22.280698	114.154960
33	Pure Yoga	Yoga Studio	22.283022	114.155674
34	The Monocle Shop	Clothing Store	22.276134	114.169283
35	Stockton Hong Kong	Bar	22.280038	114.155472
36	Sake Bar Ginn	Japanese Restaurant	22.280859	114.155308
37	Seventh Son Restaurant (家全七福酒家)	Cantonese Restaurant	22.278212	114.170935
38	Duddell's (都爹利會館)	Chinese Restaurant	22.280222	114.157319
39	Toritama (酉玉)	Japanese Restaurant	22.279679	114.155283
40	Kanizen (蟹膳)	Japanese Restaurant	22.276875	114.170727
41	The Pottinger (石板街酒店)	Hotel	22.282996	114.155413
42	Grand Hyatt Hong Kong (香港君悅酒店)	Hotel	22.280963	114.171673
43	Thaiwan	Bar	22.275542	114.170545
44	Beefbar	Steakhouse	22.280078	114.157521
45	COS	Clothing Store	22.283069	114.155481
46	CIAK - In the Kitchen	Italian Restaurant	22.280554	114.157689
47	Lei Garden Restaurant (利苑酒家)	Cantonese Restaurant	22.284016	114.158943

Mark the above venues in the map, different categories in different colors.

Table combines all top categories of Shanghai, Beijing and Hongkong

City	Shanghai	Beijing	Hongkong
1st Most Common Venue	Hotel	Historic Site	Hotel
2nd Most Common Venue	Coffee Shop	Hotel	Café
3rd Most Common Venue	Café	Park	Steakhouse
4th Most Common Venue	Chinese Restaurant	Café	Italian Restaurant
5th Most Common Venue	Fast Food Restaurant	Chinese Restaurant	Cantonese Restaurant
6th Most Common Venue	Indian Restaurant	Coffee Shop	Yoga Studio
7th Most Common Venue	Park	Peking Duck Restaurant	Bar
8th Most Common Venue	Art Museum	Temple	Japanese Restaurant
9th Most Common Venue	Lounge	Shopping Mall	Chinese Restaurant
10th Most Common Venue	Hotel Bar	Yunnan Restaurant	Clothing Store

Conclusion

Compare the last table of Shanghai, Beijing and Hongkong, you can see the top 1 venue category in Beijing of course is the historic site, while Shanghai and Hongkong are little different in shopping and food categories. So if you like history and historic sites, Beijing is no doubt the best city to visit. If you like shopping and food from world, Hongkong is your choice, while if you want to see a modern China city with its culture and museums, then go to Shanghai.

Thank you!