

Capstone Project - Introduction

Business Problem Statement

Imagine you are business man that is looking to start a new business in a given city. One of the first things you need to do is to identify the best location to establish your business. In order to do that, you need to study the current market and demand for the particular kind of business you are interested in establishing on the city. This task may represent a real challenge, specially if you are new to the city and you are not familiar with the different neighborhoods and their distribution around in the city.

Proposed Solution

We proposed to create a tool to assist the users to analyze a given city's blueprint in regards of a particular kind of business. This is achived by generating a map of the city and pin-pointing the most popular venues of the kind of business in scope. The map, in turn, gives the users a city-wide overview of the venues distribution, which may be used to identify areas with no venues or areas with too many venues. This information results very usefull to decide on the best location to establish a new business venue.

Data Description

We will use the Foursquare location data to solve this problem. You can find below a description of the different data types used.

1. Venue categories - We pull all the different venue categories available in Foursquare using the categories endpoint and re-arragen them into a dataframe in a parent-child fashion.

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In [17]: subcategories_df[subcategories_df['CategoryName']=='Shop & Service'].head(10)
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Out[17]:
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	CategoryId	CategoryName	SubCategoryId	SubCategoryName	I
726	4d4b7105d754a06378d81259	Shop & Service	52f2ab2ebcbc57f1066b8b56	ATM	
727	4d4b7105d754a06378d81259	Shop & Service	5267e446e4b0ec79466e48c4	Adult Boutique	
728	4d4b7105d754a06378d81259	Shop & Service	4bf58dd8d48988d116951735	Antique Shop	
729	4d4b7105d754a06378d81259	Shop & Service	4bf58dd8d48988d127951735	Arts & Crafts Store	
730	4d4b7105d754a06378d81259	Shop & Service	52f2ab2ebcbc57f1066b8b43	Astrologer	
731	4d4b7105d754a06378d81259	Shop & Service	4eb1c1623b7b52c0e1adc2ec	Auto Dealership	
734	4d4b7105d754a06378d81259	Shop & Service	52f2ab2ebcbc57f1066b8b44	Auto Garage	
735	4d4b7105d754a06378d81259	Shop & Service	56aa371be4b08b9a8d5734d3	Auto Workshop	
736	4d4b7105d754a06378d81259	Shop & Service	4bf58dd8d48988d124951735	Automotive Shop	
737	4d4b7105d754a06378d81259	Shop & Service	52f2ab2ebcbc57f1066b8b32	Baby Store	

2. Venue data - Once the user has selected a city and a venue category, we search for venues with the given category in the bounds of the geocode of the city. Note that the search endpoint will also retrieve venues for subcategories of the given category. The sample data below is using *'Salt Lake City'* as city and *'Sporting Goods Shop'* as venue category.

In [18]: venues_df

Out[18]:

	Venue	Latitude	Longitude	Category	Address
0	Wasatch Touring	40.766880	-111.870517	Sporting Goods Shop	702 E 100 S (700 E), Salt Lake City, UT 84102,...
1	Tribal West Lacrosse	40.571475	-111.873055	Sporting Goods Shop	9860 S 700 E (Suite 6), Sandy, UT 84070, Unite...
2	Silver Star Ski & Sport	40.656898	-111.514320	Ski Shop	1825 Three Kings Dr, Park City, UT 84060, Unit...
3	Salt Lake Running Company	40.739520	-111.827082	Sporting Goods Shop	1356 S Foothill Dr, Salt Lake City, UT 84108, ...
4	Big 5 Sporting Goods	40.722434	-111.855884	Sporting Goods Shop	2236 S 1300 E, Salt Lake City, UT 84106, Unite...
5	Switchback Sports	40.659505	-111.501886	Sporting Goods Shop	1685 Bonanza Dr (Kerns), Park City, UT 84060, ...
6	Play It Again Sports - Highland Drive	40.625800	-111.835609	Sporting Goods Shop	6910 S Highland Dr #3, Cottonwood Heights, UT ...
7	Cabela's	40.986458	-111.912017	Sporting Goods Shop	391 N Cabelas Dr, Farmington, UT 84025, United...
8	Christy Sports	40.728428	-111.548347	Business Service	6622 N Landmark Dr B-110, Park City, UT 84098,...
9	Oakley Vault	40.729051	-111.550073	Accessories Store	6699 N Landmark Dr Ste A110, Park City, UT 840...
10	Oakley Store	40.635906	-111.886081	Accessories Store	6191 S State St Ste 1470, Murray, UT 84107, Un...
11	Foot Locker	40.562678	-111.895534	Shoe Store	10450 S State St Ste 1400 (at Shops at South T...
12	Sportsman's Warehouse	40.560838	-111.972812	Sporting Goods Shop	10462 S River Heights Dr, South Jordan, UT 840...
13	Foot Locker	40.635224	-111.884938	Shoe Store	6191 S State St Ste 329, Murray, UT 84107, Uni...
14	DICK'S Sporting Goods	40.611437	-111.982311	Sporting Goods Shop	7682 South Campus Drive, West Jordan, UT 84084...
15	International Mountain Equipment	40.700512	-111.801561	Sporting Goods Shop	Salt Lake City, UT 84109, United States
16	Gear Express Climbing Gear	40.710306	-111.977656	Sporting Goods Shop	2702 South Suite E (3600 West), Salt Lake City...
17	Wilde Arrow Archery	40.922427	-111.894566	Sporting Goods Shop	470 N 1100 W, Centerville, UT 84014, United St...
18	AJ Motions Sports Outlet	40.580029	-111.874062	Sporting Goods Shop	9432 S Union Sq, Sandy, UT 84070, United States
19	Deboer's Running Store	40.887967	-111.880291	Sporting Goods Shop	135 S Main St, Bountiful, UT 84010, United States
20	Christy Sports	40.686357	-111.794911	Sporting Goods Shop	3939 South Wasatch Boulevard Suite 16 (at Jupi...
21	pool n patio	40.700058	-111.828309	Sporting Goods Shop	Utah, United States
22	Wave Products	40.725279	-111.894872	Sporting Goods Shop	125 W 2100 S, Salt Lake City, UT 84115, United...

	Venue	Latitude	Longitude	Category	Address
23	RunGr8 Running Center	40.522864	-111.955323	Sporting Goods Shop	2608 West 12600 South, Riverton, UT 84065, Uni...
24	Salt Lake Running Company	40.527821	-111.858139	Sporting Goods Shop	1132 E Draper Pkwy, Draper, UT 84020, United S...
25	Nike Factory Store	40.622394	-111.979784	Sporting Goods Shop	3736 W Center Park Dr Ste 120 (at Jordan Landi...
26	Salt Lake Running Company	40.717681	-111.871720	Sporting Goods Shop	2454 S 700 E (at I-80), Salt Lake City, UT 841...
27	REI	40.700694	-111.801223	Sporting Goods Shop	3285 E 3300 S (Valley St), Salt Lake City, UT ...
28	Cabela's	40.437689	-111.888870	Sporting Goods Shop	2502 W Cabelas Blvd, Lehi, UT 84043, United St...
29	Nike Factory Store	40.434596	-111.884012	Sporting Goods Shop	3700 N Cabelas Blvd Ste 301 (at Outlets at Tra...
30	REI	40.564169	-111.898474	Sporting Goods Shop	230 W 10600 S, Ste 1700 (at South Towne Mall),...
31	Nike Factory Store	40.725898	-111.552567	Sporting Goods Shop	6699 N Landmark Dr Ste L100, Park City, UT 840...
32	9 Dragons Fight Shop	40.713793	-111.887813	Sporting Goods Shop	2607 S State St Ste D, South Salt Lake, UT 841...
33	Soccer Plus	40.558418	-111.937899	Sporting Goods Shop	1645 W Towne Center Dr, South Jordan, UT 84095...
34	Academy Sports Utah	40.623344	-111.854550	Sporting Goods Shop	7035 S 1300 E, Midvale, UT 84047, United States
35	Ski Butlers Ski Rental Delivery	40.663820	-111.497620	Sporting Goods Shop	1821 Sidewinder Dr, Park City, UT 84060, Unite...
36	Sportsman's Warehouse	40.619291	-111.896042	Sporting Goods Shop	165 W 7200 S (at S 185 W), Midvale, UT 84047, ...
37	DICK'S Sporting Goods	40.621096	-111.861725	Sporting Goods Shop	7170 S 1000 E, Midvale, UT 84047, United States
38	Patagonia Outlet	40.720938	-111.858306	Clothing Store	2292 S Highland Dr, Salt Lake City, UT 84106, ...
39	Eaglewood Golf Course	40.835462	-111.885946	Golf Course	1110 E Eaglewood Dr, North Salt Lake, UT 84054...
40	Park City Ski Swap	40.723785	-111.537155	Sporting Goods Shop	1388 Center Dr (at Basin Rec Field House), Par...
41	Jans Mountain Outfitters	40.657009	-111.506273	Sporting Goods Shop	1600 Park Ave, Park City, UT 84060, United States
42	Scheels	40.546621	-111.893186	Sporting Goods Shop	11282 S State St (at Auto Mall Drive), Sandy, ...
43	Backcountry.com Retail Store	40.712617	-111.966724	Sporting Goods Shop	2607 S 3200 W #A, Salt Lake City, UT 84119, Un...
44	Universal Athletics	40.622216	-111.870867	Sporting Goods Shop	735 E Fort Union Blvd, Midvale, UT 84047, Unit...
45	Poco Loco	40.702496	-111.852531	Sporting Goods Shop	3142 S Highland Dr, Salt Lake City, UT 84106, ...

	Venue	Latitude	Longitude	Category	Address
46	Columbia Factory Store	40.728196	-111.551865	Clothing Store	6699 North Landmark Dr, Park City, UT 84098, U...

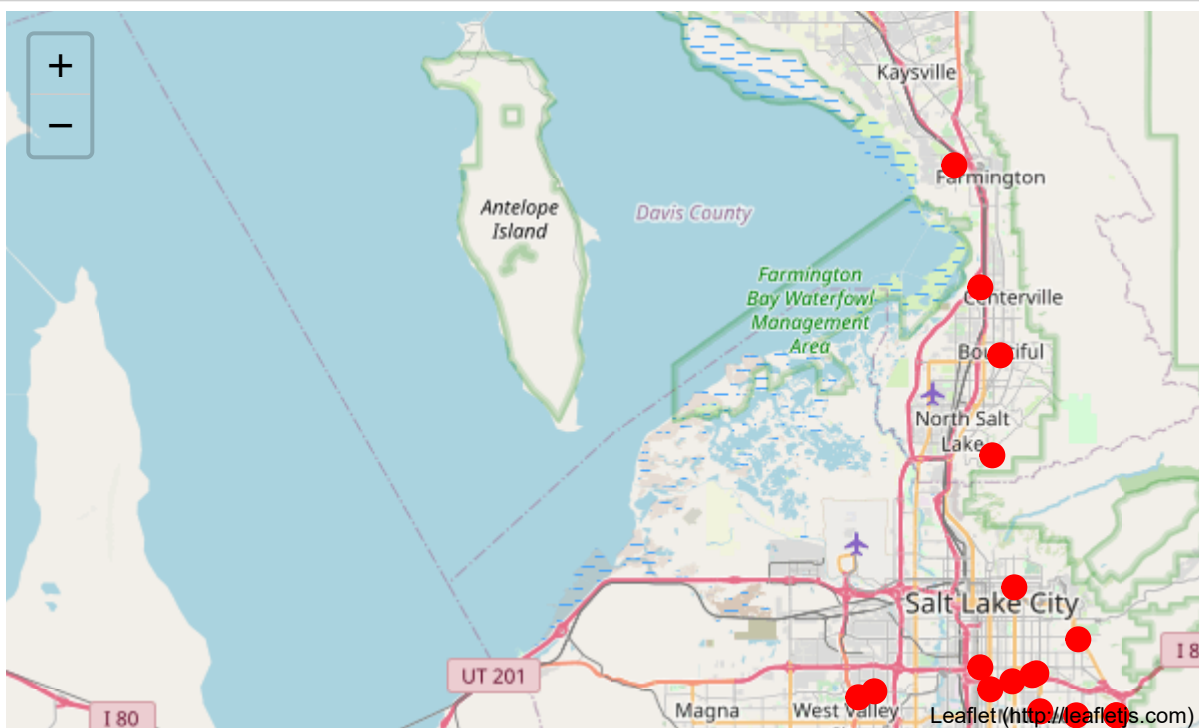
Visualize the map

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In [9]: # create map
map_venues = folium.Map(location=[latitude, longitude], zoom_start=10)

# add markers to the map
markers_color = colors.rgb2hex(colors.BASE_COLORS['r'])
for lat_i, lon_i, name_i, cat_i in zip(venues_df['Latitude'], venues_df['Longitude'], venues_df['Venue'], venues_df['Category']):
    label = folium.Popup(str(name_i) + ' - Category: ' + str(cat_i), parse_html=True)
    folium.CircleMarker([lat_i, lon_i], radius=5, popup=label, color=markers_color, fill=True,
                        fill_color=markers_color, fill_opacity=1).add_to(map_venues)

map_venues
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Out[9]:



In []: