

by Alexey Magnushevsky

This data will be used to calculate a “central” point of each neighbour (columns latitude and longitude) in formatted dataframe

	Name	Geometry	Area	latitude	longitude
0	praha 1	[[14.410891049000043, 50.078674687000046], [14...	5538443.86	50.08728	14.41742
1	praha 10	[[14.502644277000059, 50.04445519500007], [14....	18599769.32	50.06762	14.46016
2	praha 11	[[14.543552948000007, 50.036187638000006], [14.5...	9793679.76	50.03178	14.50719
3	praha 12	[[14.450632163000023, 50.014527356000003], [14....	23317909.03	50.00564	14.40462
4	praha 13	[[14.320621949000042, 50.040106807000003], [14....	13196802.35	50.05163	14.34231

Based on this “central” point the Foursquare will be queried to get all venues inside the radius of 10 km from the central point.

	id	name	categories	referralId	hasPerk	location.address	location.lat	location.lng	location.labeledLatLngs	location.distance	location.postalCode	location.cc	location.city	location.state	location.country	location.formattedAddress
0	4d7b811e86cfa1432e7fb5a0	Letná Beer Garden	Beer Garden	1618338717	V-	Kosteční	50.096031	14.425448	[[{"label": "display", "lat": 50.096031, "lng": 14.425448}], [{"label": "display", "lat": 50.096031, "lng": 14.425448}]]	1130	170 00	CZ	Praha	Hlavní město Praha	Česká republika	[Kosteční, 17 Česk
1	533830af498e2e6499e78d4e	Czech Beer Museum Prague	History Museum	1618338717	V-	Husova 7	50.084961	14.417916	[[{"label": "display", "lat": 50.084961, "lng": 14.417916}], [{"label": "display", "lat": 50.084961, "lng": 14.417916}]]	260	110 00	CZ	Praha	Hlavní město Praha	Česká republika	[Husova 7, 11 Česk
2	5b950734121384002c00e478	Craft Beer Spot	Beer Bar	1618338717	V-	Pláská 623/5	50.080581	14.405875	[[{"label": "display", "lat": 50.080581, "lng": 14.405875}], [{"label": "display", "lat": 50.080581, "lng": 14.405875}]]	1111	150 00	CZ	Praha	Hlavní město Praha	Česká republika	[Pláská 62 Praha, Česk
3	50d9dc09e4b0260d1c11aeefe	Beer Spa Bernard Prague	Spa	1618338717	V-	Týn 10	50.088085	14.424127	[[{"label": "display", "lat": 50.088085, "lng": 14.424127}], [{"label": "display", "lat": 50.088085, "lng": 14.424127}]]	487	NaN	CZ	Praha	Hlavní město Praha	Česká republika	[Týn 10, Ph
4	5ef22ddd8d0fc400085053e1	Meat Beer	Burger Joint	1618338717	V-	Na Příkopě 852/10	50.084290	14.425851	[[{"label": "display", "lat": 50.08429, "lng": 14.425851}], [{"label": "display", "lat": 50.08429, "lng": 14.425851}]]	688	110 00	CZ	Praha	Hlavní město Praha	Česká republika	[Na Příkopě 85; Praha, Čer

The received venues data contains many columns, but for our purpose only few of them are needed:

	id	name	categories	lat	lng
0	4d7b811e86cfa1432e7fb5a0	Letná Beer Garden	Beer Garden	50.096031	14.425448
1	533830af498e2e6499e78d4e	Czech Beer Museum Prague	History Museum	50.084961	14.417916
2	5b950734121384002c00e478	Craft Beer Spot	Beer Bar	50.080581	14.405875
3	50d9dc09e4b0260d1c11aeefe	Beer Spa Bernard Prague	Spa	50.088085	14.424127
4	5ef22ddd8d0fc400085053e1	Meat Beer	Burger Joint	50.084290	14.425851

All venues should be filtered to use only beer related categories: 'Beer Bar', 'Bar', 'Beer Garden', 'Restaurant'

	id	name	categories	lat	lng	district
0	4d7b811e86cfa1432e7fb5a0	Letná Beer Garden	Beer Garden	50.096031	14.425448	praha 1
2	5b950734121384002c00e478	Craft Beer Spot	Beer Bar	50.080581	14.405875	praha 1
5	5f691897501fe94186d60c6e	Beer & Beer	Beer Bar	50.078335	14.426868	praha 1
7	52c1ce5911d2d1e4fd8950bb	Prague Beer Museum	Beer Bar	50.074536	14.436610	praha 1
8	5ebc209c3c19fe0008678505	Beer Garden Karlín	Beer Garden	50.093918	14.439669	praha 1

‘Restaurant’ can be disputable, but each restaurants in Czechia has beer.

Of course, the one district’s venues may appear in results for many districts due to selected radius, so the received data should be additionally “cleaned” – the idea is check if venue’s coordinates lay inside district geometry or not. The new column inDistrict shows if venue is inside the particular district or not.

	id	name	categories	lat	lng	district	inDistrict
0	4d7b811e86cfa1432e7fb5a0	Letná Beer Garden	Beer Garden	50.096031	14.425448	praha 1	False
2	5b950734121384002c00e478	Craft Beer Spot	Beer Bar	50.080581	14.405875	praha 1	False
5	5f691897501fe94186d60c6e	Beer & Beer	Beer Bar	50.078335	14.426868	praha 1	True
7	52c1ce5911d2d1e4fd8950bb	Prague Beer Museum	Beer Bar	50.074536	14.436610	praha 1	False
8	5ebc209c3c19fe0008678505	Beer Garden Karlín	Beer Garden	50.093918	14.439669	praha 1	False

The 'False' venues are removed from the dataset:

	id	name	categories	lat	lng	district	inDistrict
5	5f691897501fe94186d60c6e	Beer & Beer	Beer Bar	50.078335	14.426868	praha 1	True
10	5c18ea09efa82a002c26e77d	Beer Story	Beer Bar	50.089230	14.422927	praha 1	True
11	58dd50378cfe546add9e2a9	Prague Beer Museum	Beer Bar	50.084971	14.413799	praha 1	True
12	52fe5f811d2a858a202b3ca	Beer challenge	Beer Garden	50.081594	14.416927	praha 1	True
16	5de032da2401ec00086a78e9	Beer Point	Bar	50.078776	14.429829	praha 1	True

For each filtered venue we retrieve the rating and url from Foursquare, the -1 (minus one) rating is set for non-rated venues

	id	name	categories	lat	lng	district	inDistrict	rating	url
5	5f691897501fe94186d60c6e	Beer & Beer	Beer Bar	50.078335	14.426868	praha 1	True	-1.0	https://beerandbeer.cz
10	5c18ea09efa82a002c26e77d	Beer Story	Beer Bar	50.089230	14.422927	praha 1	True	5.8	
11	58dd50378cfe546add9e2a9	Prague Beer Museum	Beer Bar	50.084971	14.413799	praha 1	True	7.0	http://www.praguebeermuseum.cz/cz/
12	52fe5f811d2a858a202b3ca	Beer challenge	Beer Garden	50.081594	14.416927	praha 1	True	-1.0	
16	5de032da2401ec00086a78e9	Beer Point	Bar	50.078776	14.429829	praha 1	True	-1.0	

Methodology

All venues are classified by the following logic:
the highest rated places - from 75% to max value of rating
the medium - from mean to 75% of rating
the minimal - from 0 to mean rating value
non-rated - equal to -1 rating value

To achieve this the temporary dataset is used to exclude non-rated venues:

	id	name	categories	lat	lng	district	inDistrict	rating	url
10	5c18ea09efa82a002c26e77d	Beer Story	Beer Bar	50.089230	14.422927	praha 1	True	5.8	
11	58dd50378cfe546add9e2a9	Prague Beer Museum	Beer Bar	50.084971	14.413799	praha 1	True	7.0	http://www.praguebeermuseum.cz/cz/
25	5a9a8c5f1ffed77e6eeca5fa	Blah Blah Craft Beer & Coffee	Beer Bar	50.077245	14.427506	praha 1	True	7.2	
38	5005a5ebe4b0594c43beb3f2	U Kunštátu	Beer Bar	50.085491	14.417177	praha 1	True	8.2	http://ukunstatu.cz
44	58c820d5951e7d64f2a88db0	Roesel	Beer Bar	50.087622	14.405665	praha 1	True	8.7	

The following results were received:
count 25.000000

mean 7.864000
std 1.100333
min 5.800000
25% 7.200000
50% 8.200000
75% 8.800000
max 9.100000

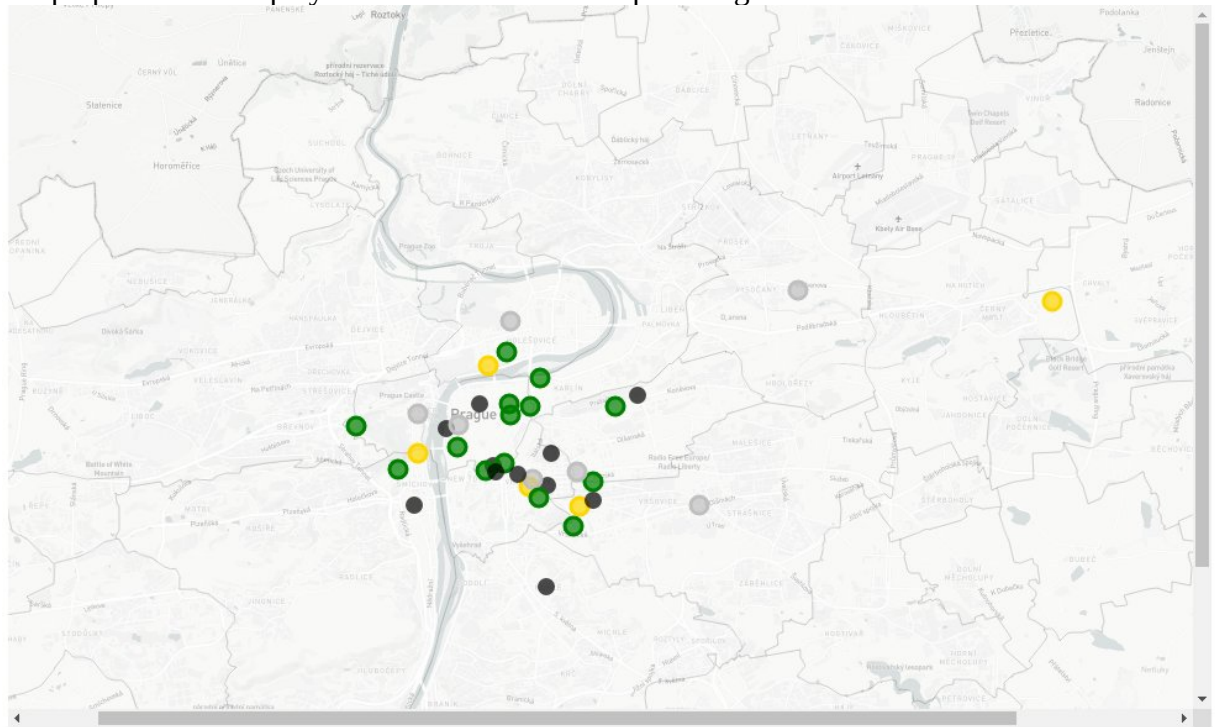
Data has been divided by beans:
[-1.1 0. 7.864 8.8 10.]

And then labelled:

	id	name	categories	lat	lng	district	inDistrict	rating	url	divided
5	5f691897501fe94186d60c6e	Beer & Beer	Beer Bar	50.078335	14.426868	praha 1	True	-1.0	https://beerandbeer.cz	not rated
10	5c18ea09efa82a002c26e77d	Beer Story	Beer Bar	50.089230	14.422927	praha 1	True	5.8		low
11	58dd50378cfe546add9e2a9	Prague Beer Museum	Beer Bar	50.084971	14.413799	praha 1	True	7.2	http://www.praguebeermuseum.cz/cz/	low
12	52fe5f8111d2a858a202b3ca	Beer challenge	Beer Garden	50.081594	14.416927	praha 1	True	-1.0		not rated
16	5de032da2401ec00086a78e9	Beer Point	Bar	50.078776	14.429829	praha 1	True	-1.0		not rated

Result

All prepared data displayed on the interactive map of Prague:



Discussion

The interactive map above shows all beer related venues in Prague according to Foursquare data. As we can see there is a big amount of venues are not rated yet, which gives a chance to any visitor to rate it.

Probably the visitor of Prague don't actively use the Foursquare.

As expected the beer venues concentrate near to central city's part, but there are some interesting places in bedroom communities quite far from the center.

According to the collected data and chosen beans the low rating is less then 7.864, and minimum rating is 5.8 Such rating is high for a many cities, so to classify correctly all beer venues the more "beans" is needed.

Anyway above map gives a start for Prague's beer venues exploring.

Conclusion

The main goal - collect all beer related venues, show them on map and set appropriate markers is achived.