Investigating the Optimal New Café Location in Zurich

IBM Applied Data Science Capstone

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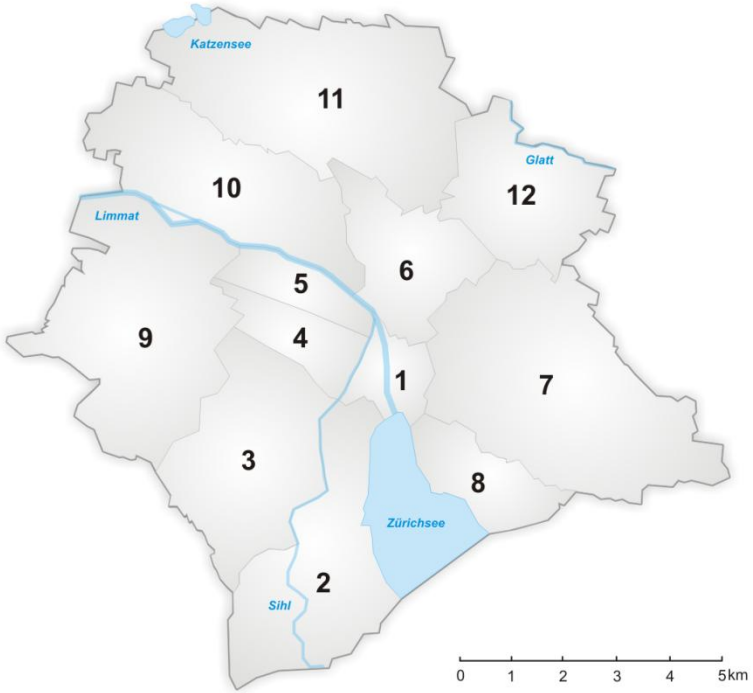
Introduction: Business Problem

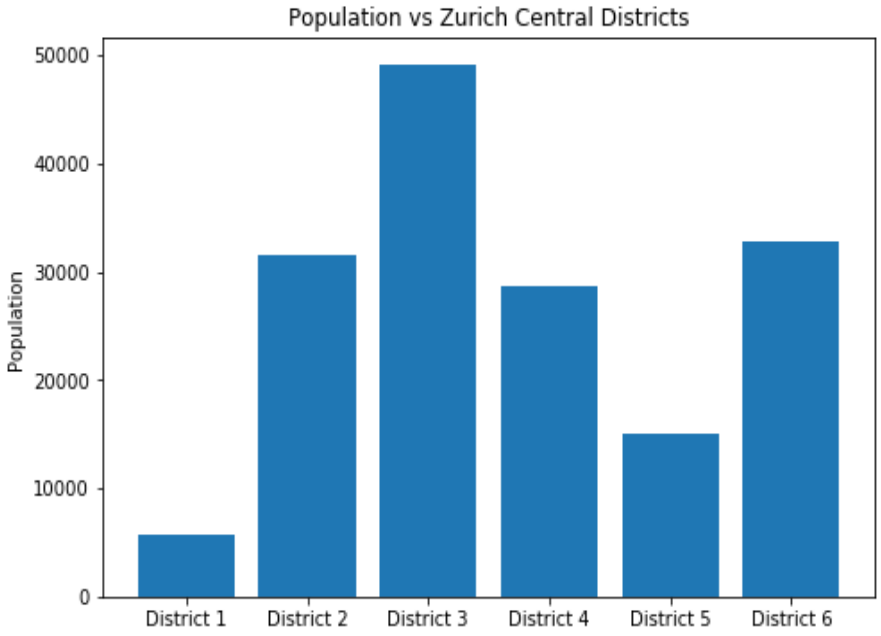
- **The business problem** is finding the optimal district for the prospective café by finding out the district with the lowest number of cafes per capita.

- For each district, the key parameter restaurant per capita can be calculated with the number of cafes in the district divided by the population of the district.

Data: Population

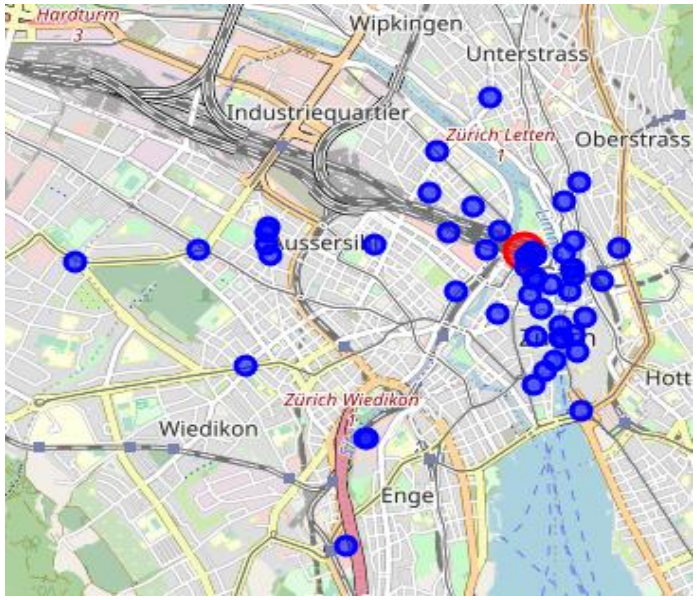
- **Population of each district:** District populations of Zurich can be find in Wikipedia page [1]





Data: Restaurant Distribution

- All the location information about the cafes in Zurich can be found in **Foursquare developer account** [2]



	name	lat	lng	distance	postalCode	formattedAddress	id
0	Café Oscar	47.377776	8.539513	37	8001	[Bahnhofplatz 15 (Südtrakt), 8001 Zürich, Schw...	53a57c62498e34ef9a4f6d69
1	Gran Café Motta	47.372346	8.542754	689	8001	[Limmatquai 66 (Rathaus), 8001 Zürich, Schweiz]	4be416f1cf200f472e72113c
2	Café Schober	47.371400	8.544149	828	8001	[Napfgasse 4, 8001 Zürich, Schweiz]	4b058888f964a52009cc22e3
3	Café Wühre	47.370761	8.542010	841	NaN	[Wuhre 11, Zürich, Schweiz]	4b9cac05f964a520997536e3
4	Café du Bonheur	47.379697	8.516199	1755	8004	[Zypressenstrasse 115, 8004 Zürich, Schweiz]	51af8be6498ea309db82eb84
5	Café Gourmet	47.377094	8.539425	112	8001	[Bahnhofplatz 7, 8001 Zürich, Schweiz]	4b8e149ff964a520c81733e3
6	A Confectioner's Café	47.378153	8.539920	42	8001	[Migros, Bahnhofstrasse 21, 8001 Zurich, Switz...	572c8b3bcd10a82036164 8f8
7	Le Cafe	47.377857	8.540275	73	8001	[Hauptbahnhof, 8001 Zürich, Schweiz]	4bc8acc5ab62d13a90c317d4
8	Restaurant Cafe Boy	47.377926	8.516215	1745	8004	[Kochstr. 2, 8004 Zürich, Schweiz]	4bb3353c4019a5935c9e37b8
9	Grande Café & Bar	47.375479	8.543395	421	8001	[Limmatquai 118, 8001 Zürich, Schweiz]	504a0c0f19a9a1bc79aae89a

Methodology

For each district (*district_i* where *i*= *{1,2,3,4,5,6}*) the number of cafes per capita can be found by following equation:

$$\#cafes\ per\ capita\ for\ district\_i = \frac{\#cafe\ of\ the\ district\_i}{\#population\ of\ the\ district\_i}$$

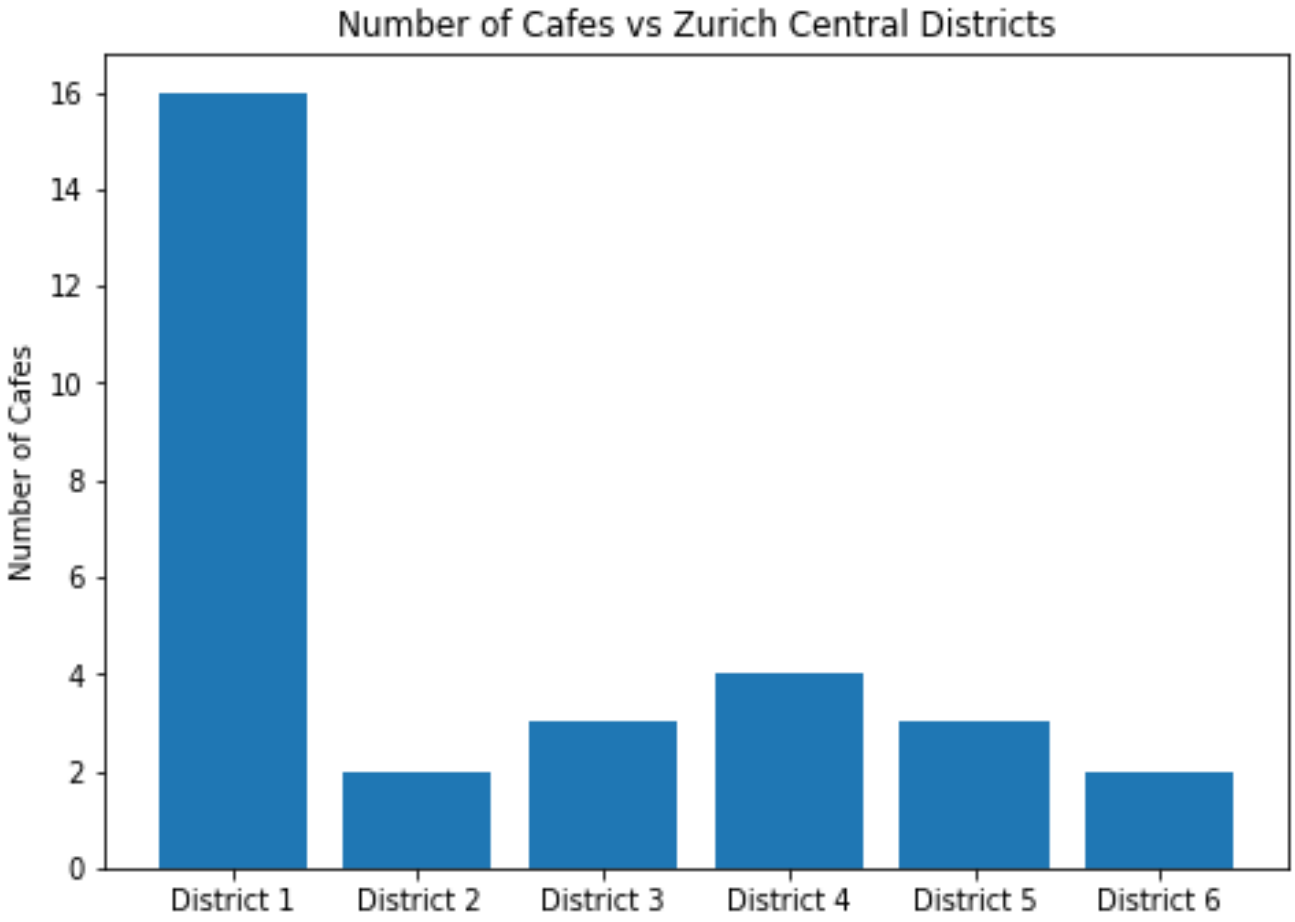
The minimum of cafes per capita will be indicate the optimal district for a café.

$$\text{The optimal district for cafe} = \underset{dist\ i}{\text{argmin}}(\ \#cafes\ per\ capita\ for\ district\_i)$$

The last 2 digits of Zurich postal code represents the district, for example if the postal code is 8005, it is the 5th district.

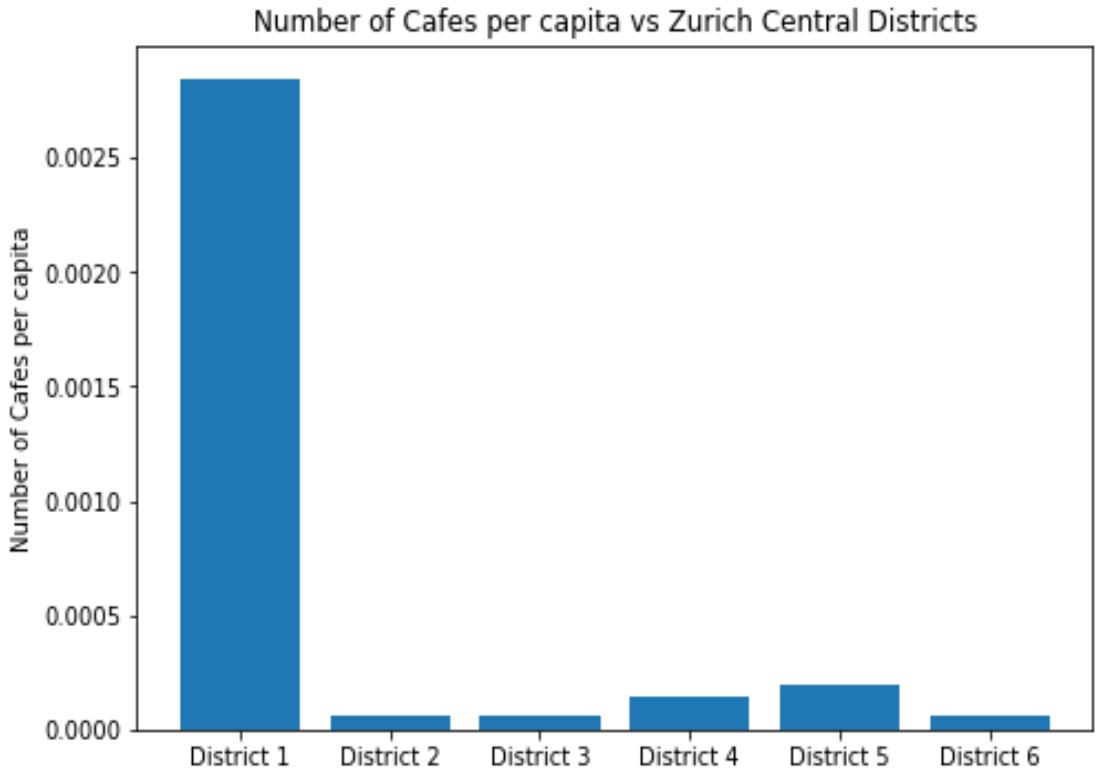
Methodology

postalCode	
8001	16
8002	2
8003	3
8004	4
8005	3
8006	2



Results & Discussion

- **District 6 has the minimum numerical value so it is the optimal district to open the café.**
- **District 2 and District 3 are also very close to minimum.**



Conclusion

- This study was done to find out the optimal district to open up a new café by using available data.
- The characteristic parameter is defined as number of cafes per number of residents in the district.
- **District 6 is the optimal place for a new café as it has the minimum value for number of cafes per capita.**
- As a future work one can consider to develop more sophisticated model to compare District 2-3-6 as they have similar parameter values.

References

1. https://en.wikipedia.org/wiki/Z%C3%BCrich#Population
2. https://developer.foursquare.com/