Restaurants and cafes in Stuttgart

INFLUENCE OF LOCATION AND TYPE OF CUISINE ON FUTURE RATINGS

INTRODUCTION

For sure, the ratings of a restaurant are highly dependent on the quality of the food, the service and the whole atmosphere.

BUT beside these criteria of a running business, are there fundamental conditions I can set before opening a business which are influencing the future rating?

E.g. before I'm opening a restaurant business I have to decide

- where to locate it and

- which kind of cusine I want to offer.

When taking the decision I should consider that this cuisine is demanded by customers in this area of the city.

Of course, I can't look in the future or asking all the residents, but I can check how the existing businesses perform.

DATA

I want to investigate this problem for the city of Stuttgart in Germany.

▶ As level of detail on the locations I'm choosing the ZIP-codes in the city area. This ZIP-code areas should sufficient enough to represent the different neighborhoods --> Web-source

▶ For each ZIP-code area I can pull the geo coordinates to get reference points per neighborhood. --> GEOPY

▶ With the geo coordinates I can get a list of food-related businesses from Foursquare which are close to each neighborhood

▶ For each food-related business I'm pulling the rating from Foursquare.

▶ For exotic cuisine I won't have enough data that's why I'm focusing on the top10-cuisines only.

▶ My dataset consists of "rating" (as target) and "close neighborhoods" and "cuisine" (as features)

▶ With a Linear Regression-method I can evaluate the impact of the features on the ratings to see if they are worth considering in the fundamental decisions.
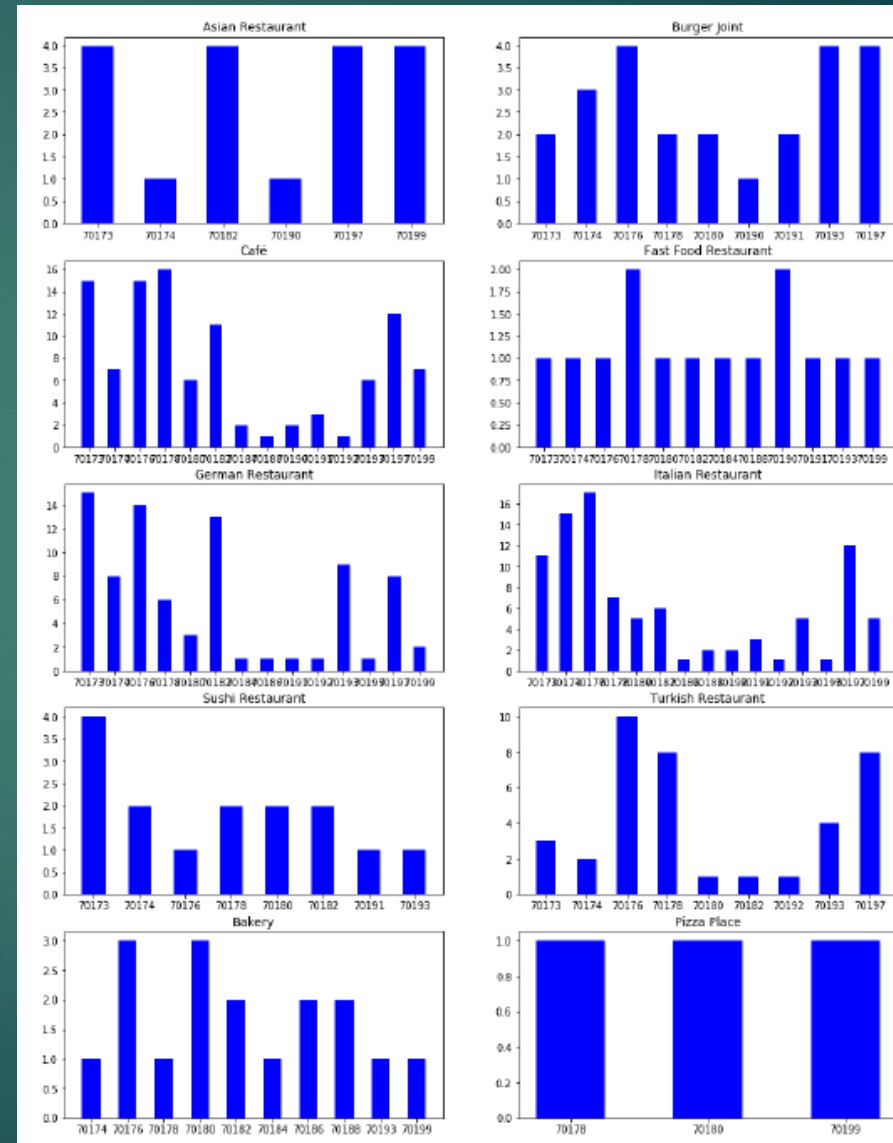
FINAL DATA SET

▶ 5 records out of 176

	Venue_id	Venue_name	Venue_category	Rating	70173	70174	70176	70178	70180	70182	...	70186	70188	70190	70191	70192	7019
0	4b1ce1eff964a520410a24e3	Oggi Tavola Mediterranea	Italian Restaurant	8.6	1	1	0	0	0	0	...	0	0	0	0	0	
1	4b44c3f8f964a52088fb25e3	Vapiano	Italian Restaurant	6.9	1	1	0	0	0	0	...	0	0	0	0	0	
2	4b4823d9f964a520f64826e3	Bierhaus West	German Restaurant	6.6	0	1	1	0	0	0	...	0	0	0	0	0	
3	4b48a6a8f964a520a35126e3	Alte Kanzlei	German Restaurant	7.0	1	0	0	0	0	1	...	0	0	0	0	0	
4	4b4c5dfef964a520aab126e3	Stern Kebap	Fast Food Restaurant	6.1	0	0	0	0	0	0	...	0	0	1	0	0	

ANALYSIS OF DATA

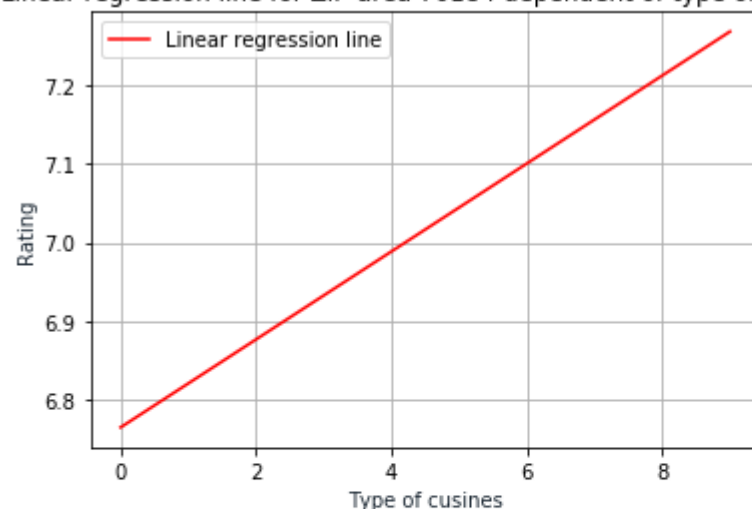No. of restaurant
per cuisine
for each ZIP-code area

RESULTS OF LINEAR REGRESSION

Feature	Coefficients
70184	**0.798**
70193	0.765
70173	0.629
70188	0.531
70199	0.290
70178	0.242
70180	0.196
Num_category	0.056
70190	0.022
70176	0.001
70192	-0.013
70182	-0.128
70191	-0.132
70174	-0.396
70186	-0.437
70197	-0.446
70195	-1.865

Linear regression line for ZIP-area 70184 dependent of type of cuisine

Linear regression line shows the likely range of a restaurant rating in ZIP-area 70184. ZIP-area is the area, where the restaurants have the best rating

min. rating is 6.75
max. rating is 7.3
type of cusine has only limited impact as the MSE is 0.66

CONCLUSION

▶ The impact of location and cusine on the rating is not significant enough to be considered as crucial criteria