How size of city affect on amount and kind of restaurants in the capitals in Europe?

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1. Introduction

1.1 Background

Restaurants are one of the most important services in our lives. Some western countries in Europe are using restaurant services daily because the lack of time. In European countries, capital cities are most often the biggest and better developed cities than other cities in the country so that is why we will check them for our research. That means since history the main pressure is taken on capitals and mostly in capitals are most of restaurants. Level of services in the country is depended on country GNI per capita, GDP and population. This three coefficients are base for building network of restaurants agglomerated in capital of selected country. Type of restaurants are strongly connected with country welfare, more prestigious restaurants are mainly reserved by cities which are giving profits with carrying all kinds of restaurants in spite of high cost guidance. Capital cities are located in different places in Europe that means similarities between them are significant. This difference can be noticed easily when we take London as a most populated capital, Copenhagen as a middle size capital city and Vaduz as a little populated capital.

1.2 Problem

We can try to estimate amount of nearest restaurants depends on city size and population, we cannot include all features in the city because our research will be ambiguous but capitals matched in this overview must have similar GNI per capita. I will rely on radius from the middle of the city, but it is not the most accurate solution because cities are not perfectly round. In this case areas of city agglomerations can be included in our project which result in greater amount of restaurants than it really is in pure city centre. Another thing that can result in divergence is API that delivers city informations, some of freshly build restaurants can be not marked on the map. This project mainly aims to find differences between big, medium and small cities in gastronomy field.

1.3 Interest

Restaurants are one of the most in demand enterprises which hire a lot of people every year to cope with the cities needs. Business in gastronomy were on of the best rewarding and solid path of career since history, because everybody needs to eat no

matter of occurrences. Advantages from the results obtained from this project can help investors get better perspective to take investment in specific group of cities.

2. Data acquisition and cleaning

2.1 Data sources

All European capitals can be found in Foursquare API. Here we can find all possible restaurants in London, information about Copenhagen restaurants are here and Vaduz restaurants are here . I will fetch all this informations as a json file to approach later research. I am also need city informations, so I will obtain London, Copenhagen and Vaduz web pages to scrap data about location, population and size.

2.2 Data cleaning

We will combine this three json files as a dataframes, later merged into one table including selected informations which will give us expected results. I decided to use notices only from selected city. Neighborhoods are primarly not included and possible mistakes on the given range should be rejected.
Problem with given data set is that accuracy of prediction need to use many other datasets since history which are hard to find or are private.
Firstly I work on scraping city web pages above to fetch informations about location, population and size, any other things are unnecessary. According to scraped dataset we can easily get restaurants from API in given area.
Ambiguous restaurants which are not finished or fallen should be marked or rejected depends on the functionality situation in this food track. I include all kinds of food or drink services across the city, so food tracks and coffee shops are handled the same as restaurants. In the case of outlier restaurants they will be removed from my project, because it will be handled as city suburbs which are not centralized in the capital city. People satisfaction will have additional column to check quality of services depended on the size of the city.

2.3 Feature selection

After data cleaning, our final dataframe will contain several columns and hundrets of rows. The key is to make accurate clusters of data which will give us some results to visualize them according to the location. The main criteria must be fulfilled but in the case of later misunderstandings and effectiveness, data can be transformed by the different perspective to achieve better results.
Advantage of dataset is small redundant data probability.

What to keep?	What to drop?	What to change?
Location of the city	Restaurants outside the city	Restaurants with insignificant mismatch

Size of the city	Restaurants where major features are missing	Restaurants that are not finished or closed
Population of the city		
Number of restaurants		
Kind of services		
Overall score of restaurants		

3. Exploratory Data Analysis (Methodology)

3.1 Calculation the targets

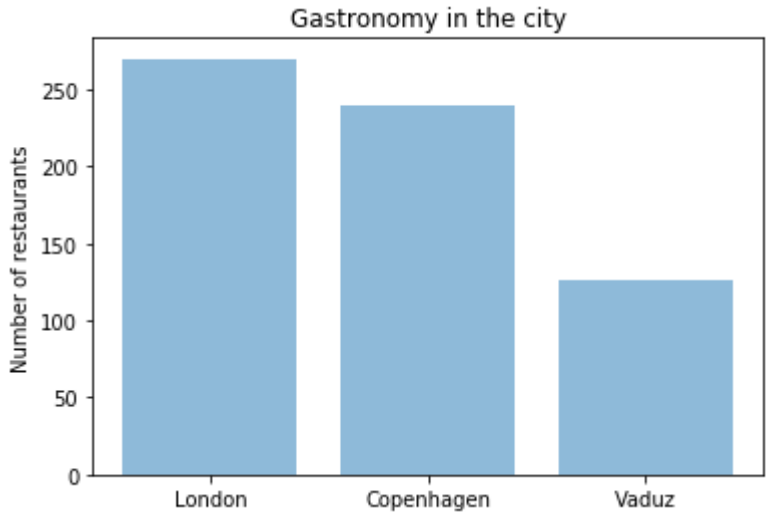
The most important things is to find the specifications of each city. One of the ways to do that is conversion between datasets from web sites and pandas dataframes. Metrics may be vary according to selected city, but our goal is to find accurate informations about located food places.

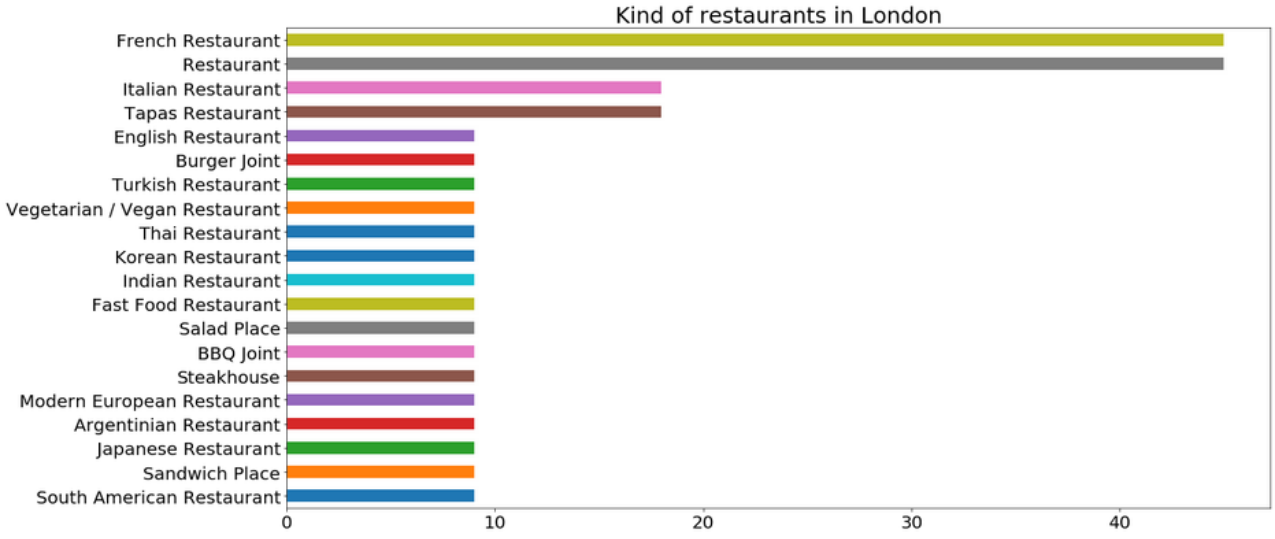
3.2 Relationships

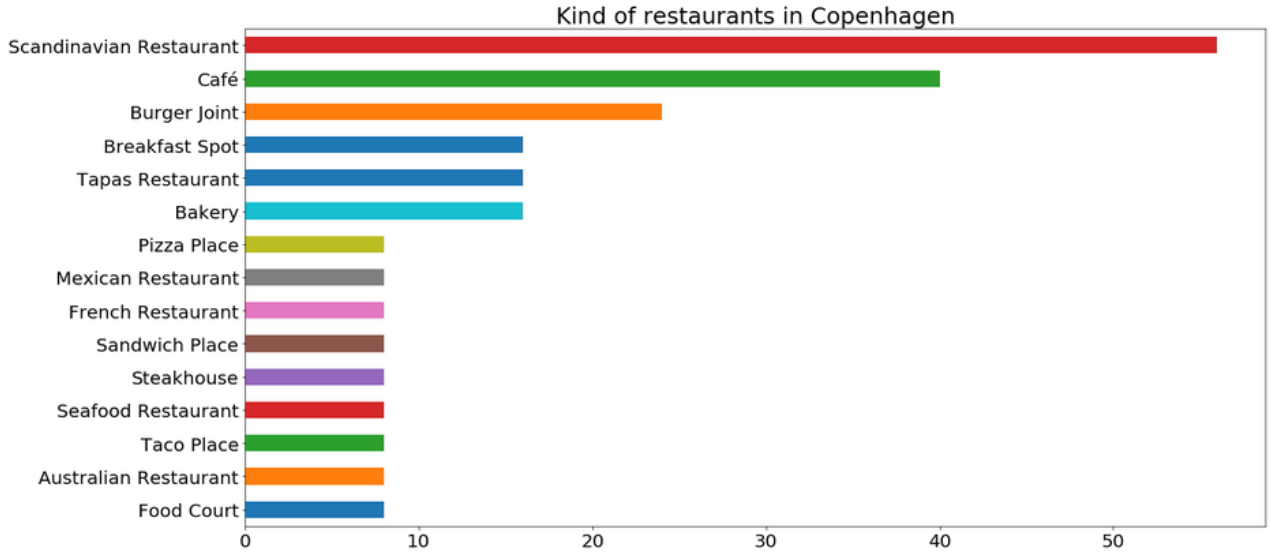
In every city we can find some categories of food restaurants that are repeated in every bigger city. This informations are very helpful to do an accurate prediction because we have some differences in numbers at the first look.
Second thing is that the dataframes from each of the city we can build in the same way, because some standards of food places must be reserved for each country in Europe.

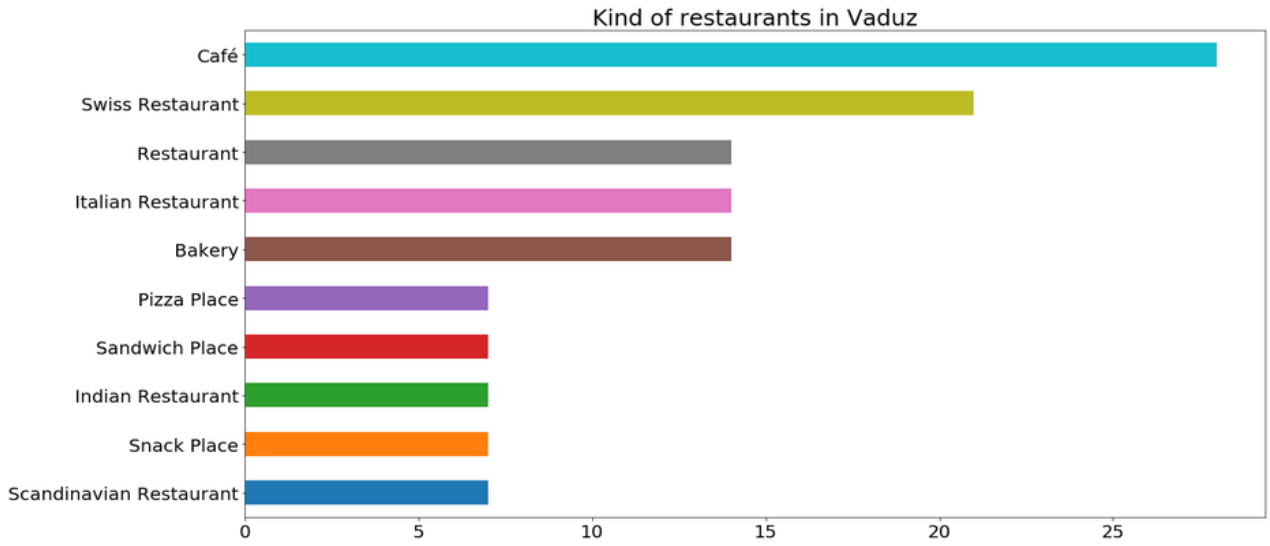
3.3 Approach to analyse

In this project, we have gained data from Wikipedia websites to get physical informations about cities which we have chosen.
The second step is cleaning this data to accquire informations important to us. In this cases creating several functions to deal with it in once are complitely necessarry.
Next we have to construct url to connect informations scraped from Wiki site and Foursquare API. In the result, we received json files with data.
We have to analyze that to get this json files into more comfortable format as a pandas dataframe which will contain informations ready to visualize.


Gastronomy in the city
Number of restaurants
0
50
100
150
200
250
London
Copenhagen
Vaduz


Kind of restaurants in London
French Restaurant
Restaurant
Italian Restaurant
Tapas Restaurant
English Restaurant
Burger Joint
Turkish Restaurant
Vegetarian / Vegan Restaurant
Thai Restaurant
Korean Restaurant
Indian Restaurant
Fast Food Restaurant
Salad Place
BBQ Joint
Steakhouse
Modern European Restaurant
Argentinian Restaurant
Japanese Restaurant
Sandwich Place
South American Restaurant
0
10
20
30
40


Kind of restaurants in Copenhagen
Scandinavian Restaurant
Café
Burger Joint
Breakfast Spot
Tapas Restaurant
Bakery
Pizza Place
Mexican Restaurant
French Restaurant
Sandwich Place
Steakhouse
Seafood Restaurant
Taco Place
Australian Restaurant
Food Court
0
10
20
30
40
50



Visualization able us to pull out results with significant conclusions at the end.

4. Conclusions

London has a lot of all kind of food places, everybody will find something for himself.
Londoners like eating in restaurants rather than Copenhagen and Vaduz citizens.
In order to succeed in british gastronomy you can relatively build restaurant with cuisine which can admire citizens.
But if you planning to move to Copenhagen you have to know that in Copenhagen city centre are majority of different kinds of food tracks which sales very good in comparison to London city centre and Vaduz.
In smaller capital cities like Vaduz in Liechtenstein we are assuming that people prefer cooking at home or eating in work places, because 'light' kind of restaurants like caffees are dominating in summaries.
Wee can crearly see that there are different fancies of eating and drinking outside according to the place which we actually be.
This is the mostly correlated to culture in given country (we can see from lotitude and langitude that these cities are pretty far away from itselves), because mainly clients shape city gastronomy.

5. Future Directions

There are many ways to apply some ideas which are conclude. From first perspective may I say that divergences between this cities are going to be bigger. That means

some kind of food places whose are leading in our plots are going to expand quickly rather than food places at the end.