

THE BATTLE OF NEIGHBORHOODS: WHERE TO OPEN A NEW ITALIAN RESTAURANT IN AMSTERDAM?

APPLIED DATA SCIENCE CAPSTONE PROJECT ON COURSERA

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INTRODUCTION

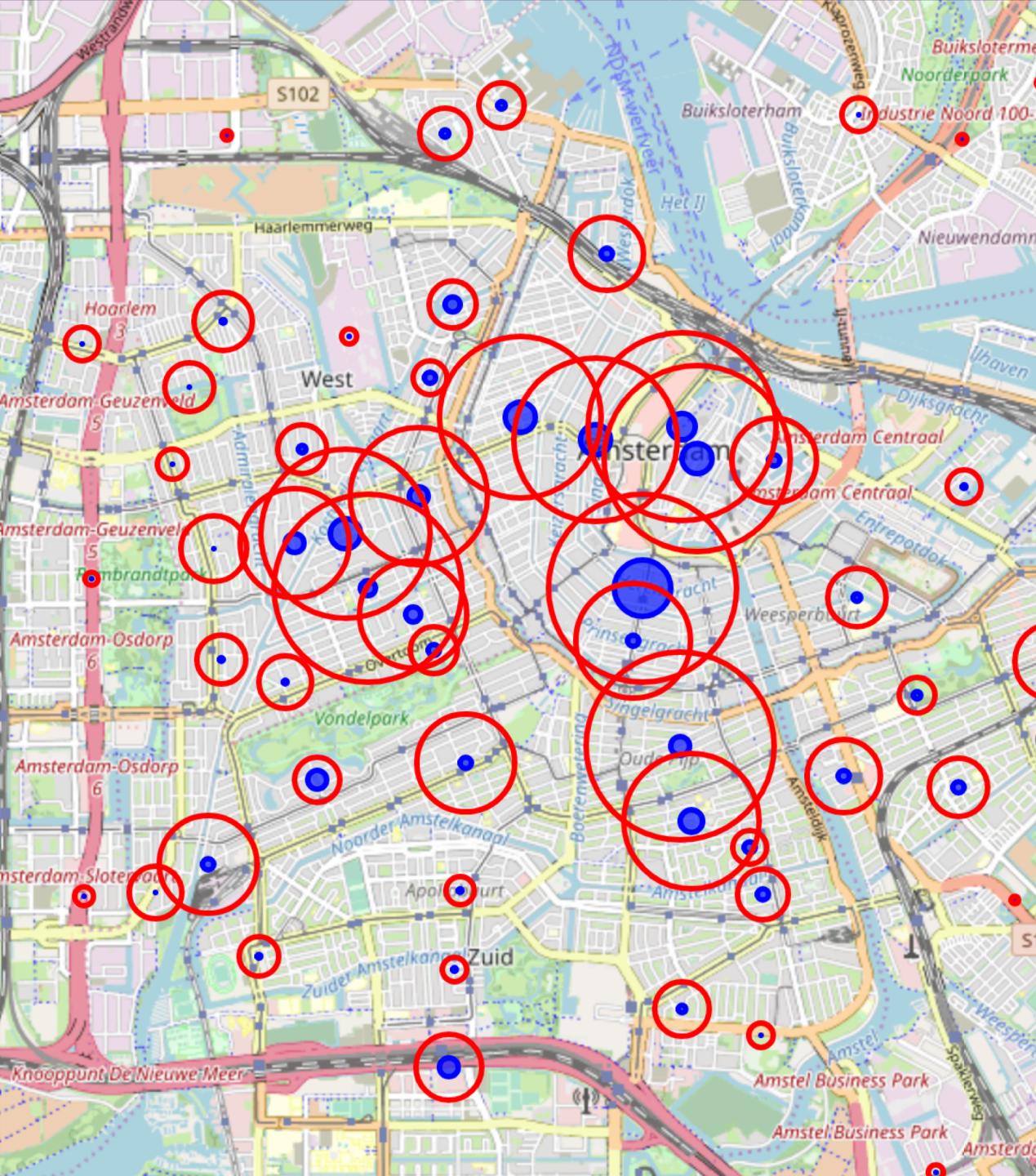
- The client would like to open a new Italian restaurant in Amsterdam (The Netherlands) and would like to know what is the best place in the city to open one, based on the other restaurants that are nearby.
- The target audience are entrepreneur in the food and services industry that want to open their first venue or expand their existing chain. The approach of this study can be easily applied to other cities or other categories of restaurants.
- This is important because the location of a restaurant can affect in a significant way its profitability.

DATA

- In order to solve the problem I will use the following data:
 1. The city of Amsterdam provides a list of Amsterdam Quarters with geospatial coordinates. https://maps.amsterdam.nl/open_geodata/ I will use that to segment the city in quarters for the analysis in order to find the most suitable quarter where to open the new venue
 2. The Foursquare API Get Venue Recommendations to get the data of the venues that are in each quarter. I will use the section parameter to restrict the results to only food venues.

METHODOLOGY

- Loaded into a pandas dataframe the open data provided by the city of Amsterdam with list of 99 Quarters with geospatial coordinates.
- Using the coordinates of the quarters, I called the Foursquare API explore <https://api.foursquare.com/v2/venues/explore> to get the top 100 venues in a 500 meter range of the central point of the quarter. I also used the section parameter to limit the results to only food venues.
- The focus of the analysis is on Italian Restaurants so I've extracted, for each quarter, the data for the number of Italian restaurants, the total number of food venues, the ratio(percentage) of Italian Restaurants over the total number of food venues and the coordinates to plot the results on a map.



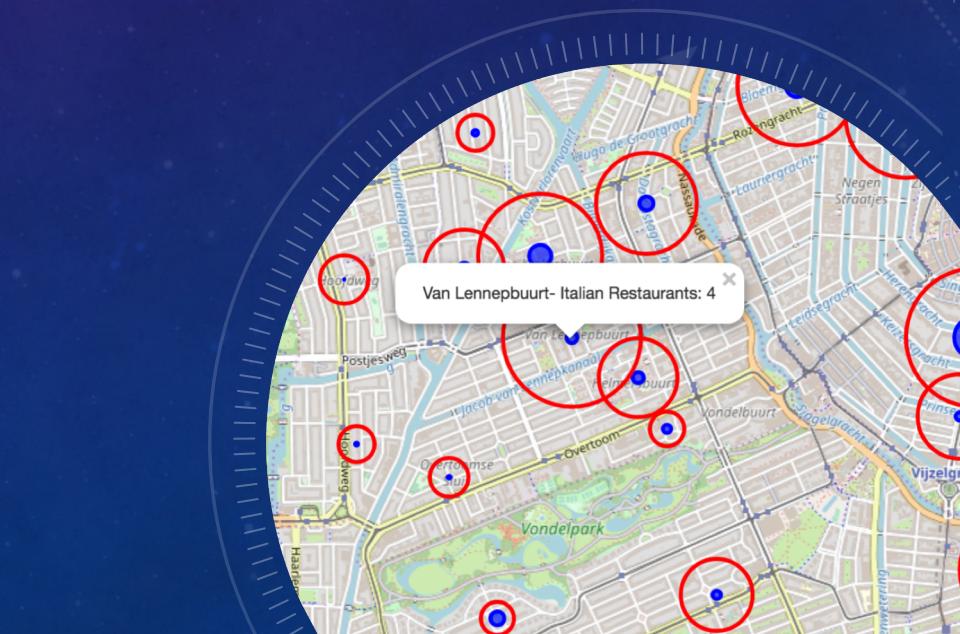
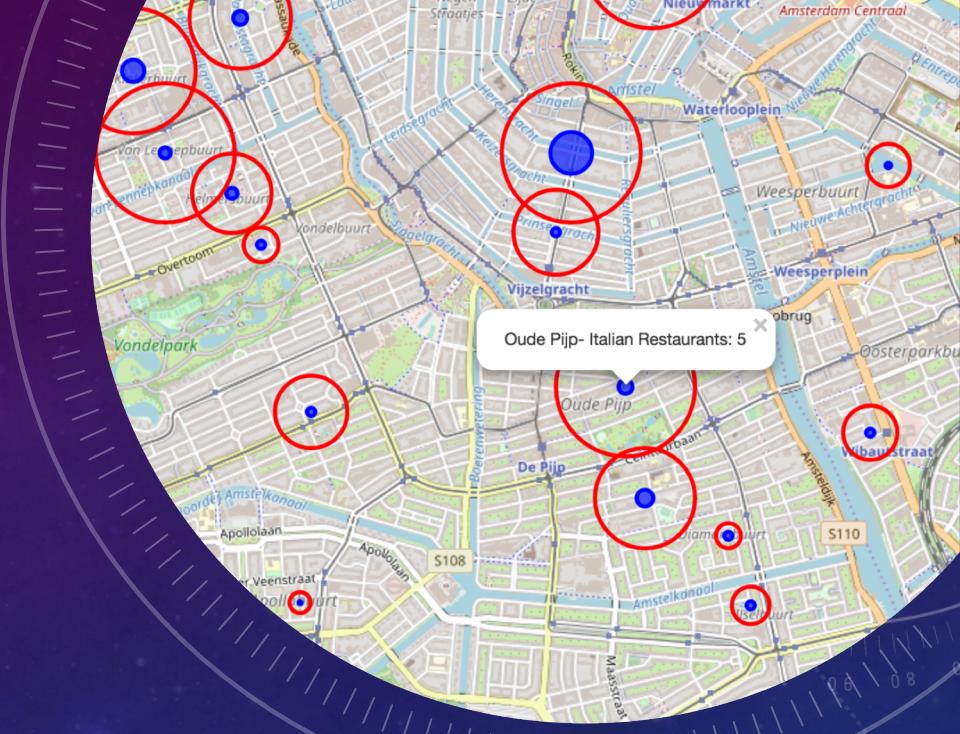
- I placed blue markers on the map for every Quarter, having size proportional to the number of Italian Restaurants in the Quarter.
- I then added to the map empty red circles with size proportional to the total number of food venues in the quarter. So that each Quarter will have a smaller blue circle representing the number of Italian Restaurants and a larger red representing the total number of food venues.
- Each Quarter will have a smaller blue circle representing the number of Italian Restaurants and a larger red circle representing the total number of food venues

RESULTS

- From the first map we can see that the Italian Restaurants are concentrated around the city center, and to a lower extend on the west side of the city. We see a similar distribution for the total number of restaurants, with the main concentration around the city center and to a lower extent to the west and south parts of the city.
- An interesting place to open a new Italian Restaurant would be a quarter with many food venues, since it indicates there's a lot of demand, but few other Italian Restaurants, so that a new one won't face to heavy competition and there's market for it. This translate to points on the map where there's a large red circle with a very small blue point in the middle.

RESULTS

- From the map there are 2 locations that jumps to the eye:
 - Van Lennepbuurt with 4 Italian Restaurants and more than 100 food venues
 - Oude Pijp with 5 Italian Restaurants and more than 100 food venues



DISCUSSION

- To further improve this analysis we would need data from additional data sources, for example on the population or the real estate value of the buildings.
- The limit of 100 venues for each quarter could limit the precision of the analysis as there are 4 quarters that seems to have more than 100 venues.
- The range of 500 meters from the center of the quarter might also be questioned as the quarters vary a lot in area. The one near the center are comparatively smaller than the ones in the outskirts. So using a variable range could lead to more accurate results.
- The city could also be divided in smaller neighborhoods; I tested this segmentation but it ended up in having a small number of venues for each division and therefore the comparison would have been more difficult.
- To further improve this analysis we would need data from additional data sources, for example on the population or the real estate value of the buildings.

CONCLUSION

- This analysis lead to the conclusion that the Foursquare data can be used to solve problems like the placing of a new venue on a city. In the specific case of Italian Restaurants in Amsterdam the 2 most promising locations are
 - Van Lennepbuurt
 - Oude Pijp
- That would be the advice to the client that posed the problem.