German beer battle of neighbor cities Cologne and Düsseldorf

Introduction

- **Background:**
  The German cities of Cologne and Düsseldorf are in just 50 km distance from each other at the lower river Rhine. Cologne is the largest city in the district of North-Rhine-Westfalia, Düsseldorf is second largest and its Capital.
- **Problem:**
  It is a kind of culture clash. Both kind of beers, "Kölsch" from Cologne and "Altbier" from Düsseldorf, are a specialty of its hometown and have a long lasting history. Both cities claim to have the best carnival, best beer and most pubs. Who is right?

Data

For the analysis we focus on "pub breweries", breweries with its own integrated pub resp. pubs with own brewery inside. First we have to find out the right search term or category to search for in Foursquare. This became base of analysis in quantity and density (of hotspots). A planned qualitative analysis of ratings was unfortunately not possible. With the available sandbox account Foursquare delivered early the error message "quota_exceeded" .

We use Foursquare data, including:

- For quantity: Number of "pub breweries" in a city (and their addresses for visualization).
- For density: Geographical distances between pubs for clustering and detecting hotspots.

Datasources are:

- Foursquare for venue data.
- Internet research for some background information.

Methodology

Main challenge for a fair comparison is finding the right categories of the mentioned "pub breweries". Starting with the German search term "Brauhaus" four different categories are mainly mentioned. Analyzing how many venues in each category contain "Brau" (for "Brauhaus" or "Brauerei") in their names, two categories were finally selected.

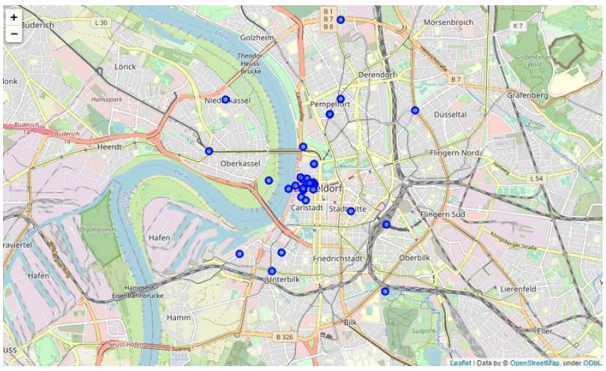
The selections were displayed in a map to visualize quantity and distribution.

A cluster analysis has been done using a hierarchical model: A dendogram based on a hierarchical model visualizes best different clusters, if there are any.

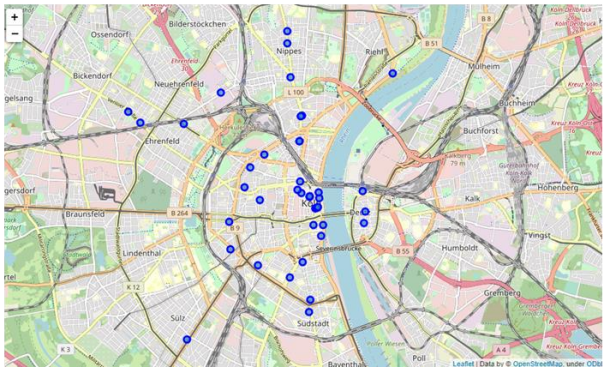
Results

Düsseldorf has 40 of the finally selected "Rheinisch Restaurants" and "Breweries", Cologne 55. Maybe no surprise because Cologne has approximately 80% more people than Düsseldorf. Compared to the city size the amount in Düsseldorf seems impressive.

DÜSSELDORF - **40** "RHEINISCH RESTAURANTS" AND BREWERIES



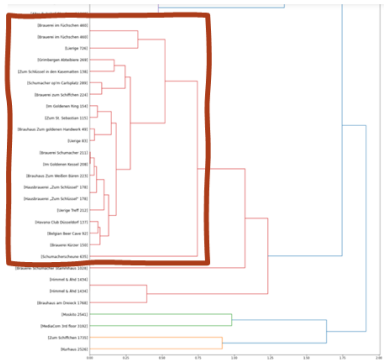
COLOGNE - **55** "RHEINISCH RESTAURANTS" AND BREWERIES



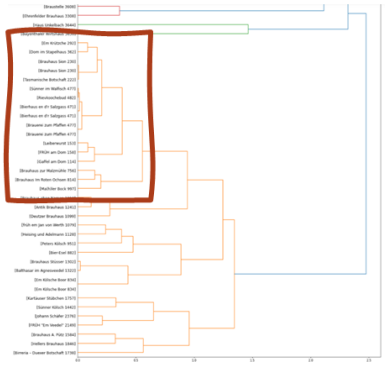
The map of Düsseldorf at the left shows a concentration in its “Altstadt” with few venues surrounding it. The map of Cologne at the right shows some more venues in its centre close to the Cathedrale, but many venues more distanced.

Driven from the visualization a hierarchical clustering and a dendogram has been done. The first impression from the maps were right: In Düsseldorf at the left is a large cluster of 22 venues (out of 40) 1.1 km around the Altstadt, in Cologne at the right are only 16 (out of 55) 1 km around the Cathedrale.

DÜSSELDORF - A CLUSTER OF **22 VENUES UP TO 1096** M AROUND THE "ALTSTADT"



COLOGNE - A CLUSTER OF **16 VENUES UP TO 997 M** AROUND THE CATHEDRALE



Cologne has the larger amount of “pub breweries”. Düsseldorf has the larger amount of “pub breweries” in relation to the number of people in the city. And in Düsseldorf the venues are much more concentrated in one cluster, in its Altstadt.

Discussion

Most challenging for not “comparing apples with bananas” is to find an objective base for the comparison. This has been done by selecting two venue categories from Foursquare. They should include most of the “pub breweries”, but surely other kind of restaurants, too. Making a different kind of selection criteria would raise other questions if only the wanted “pub breweries” are considered.

Conclusion

The tourist office of Cologne may claim to have more “pub breweries” than Düsseldorf. Düsseldorf has a higher density and today Düsseldorf tourist office already claims to have “the longest counter in the world”, referring to the high density in its Altstadt. This is fully correct as we have learned.