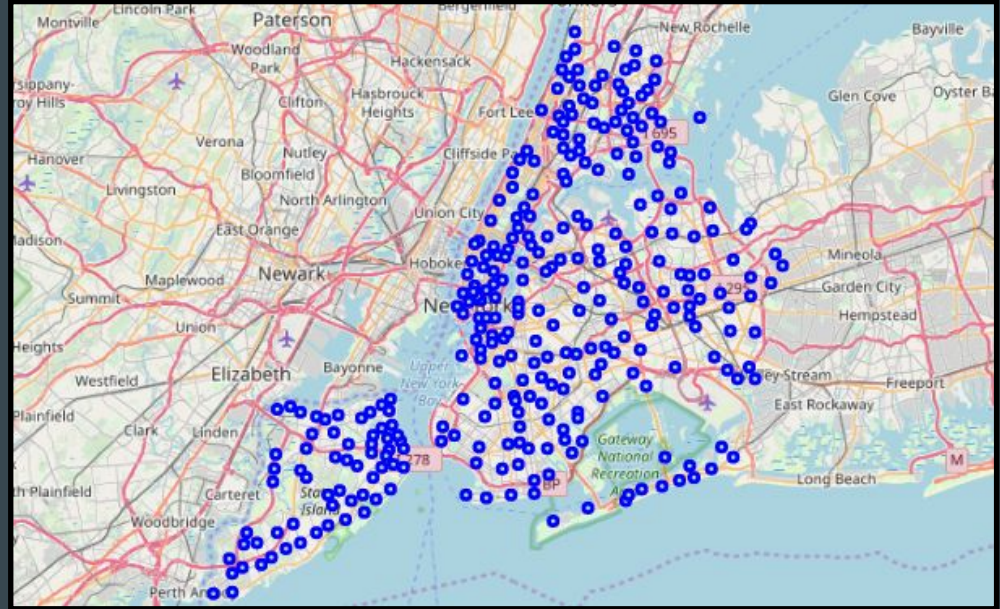# New York's Boroughs Analysis

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IBM Data Science Capstone Project - CAP
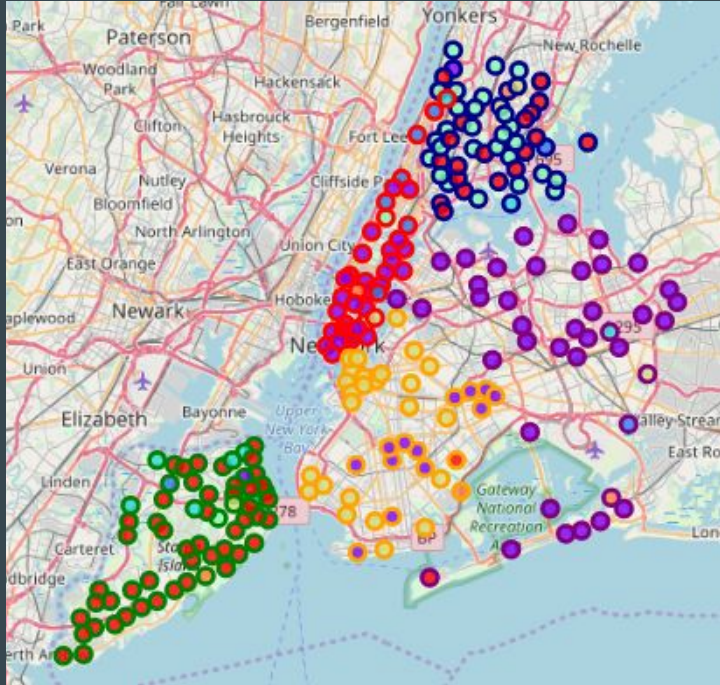
Objective

- Compare and establish differences, if they exist, between the five boroughs that form New York, the Bronx, Manhattan, Brooklyn, Queens, and Staten Island, focussing on the distribution and clustering of venues.
- Growth possibilities for the city may express in the commercial distribution of its venues and public services

Data

- Spatial Data Repository. On New York's neighborhoods distribution.
- Foursquare. Geographical description of the explored venues around the centers of the neighborhoods in New York City
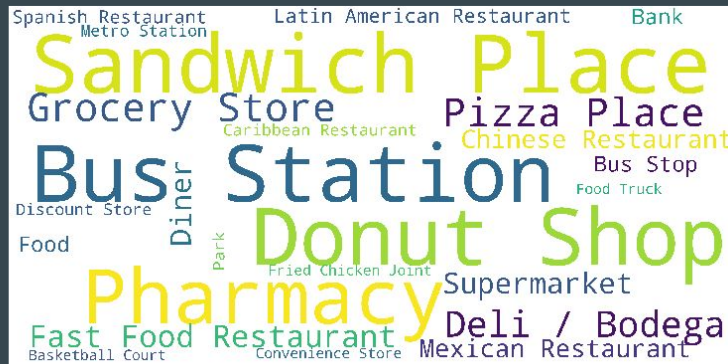
K-means clustering

For each borough only two or three clusters have the majority of neighborhoods and the differences between the first and second biggest cluster are significant.

Bronx

One element that differentiates these clusters is the absence, in both of them, of american restaurant type venue, in its place foods from the Caribbean and Latin America are frequent.

Public transport is an important differentiator, with a prevalence of one cluster over the other.

Manhattan

Most of the neighborhoods fall into one cluster with more than 20 neighborhoods

The second biggest also presents food a ubiquitous, and its defining factor is the existence of parks as a more common venue and mexican restaurants, in contrast with the italian and american restaurants that prevail in the bigger one.

Brooklyn

The two biggest clusters are very similar in the broad categories that define each group of neighborhoods.
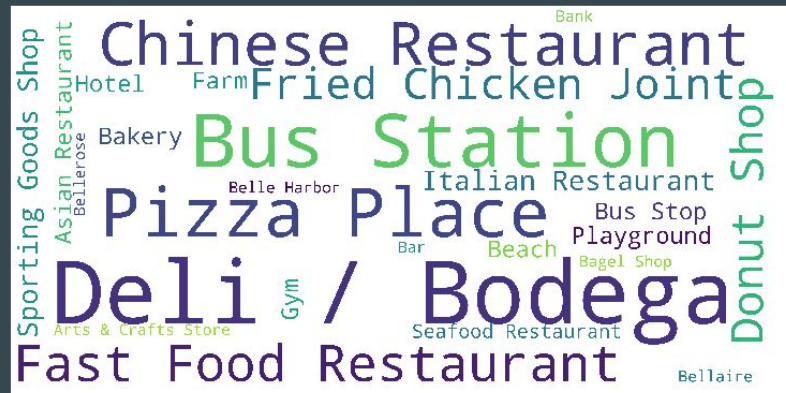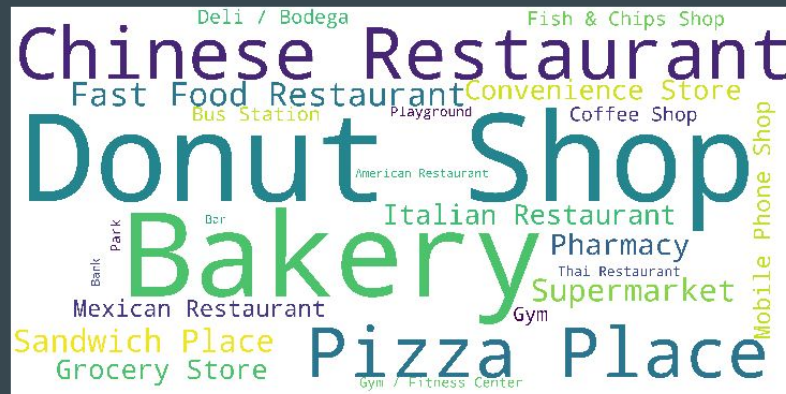
Two main clusters with similar number of neighbours, differentiated by the frequency of pharmacy type venues, coffee shops and restaurants present in each one,

Queens

Public transport and its availability is the differentiating factor for the two biggest clusters.

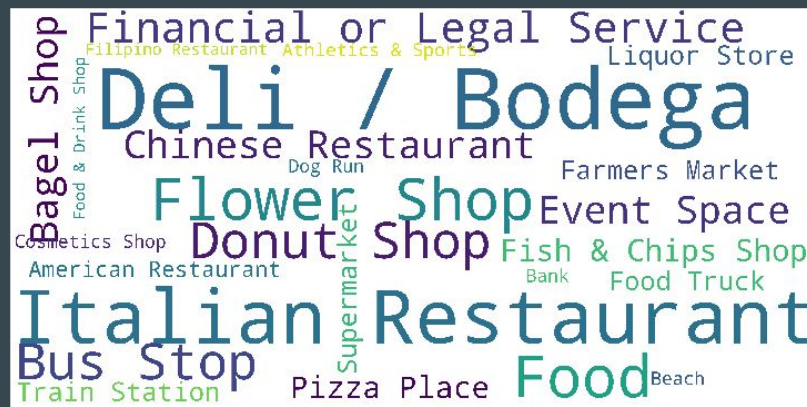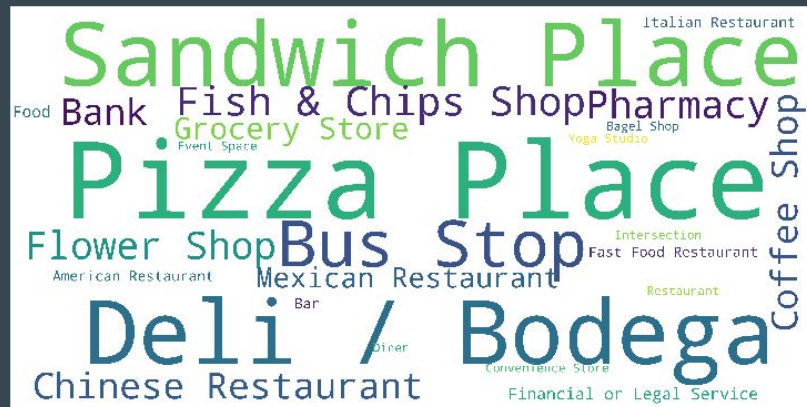Chinese restaurants and donuts shop are prevalent in both.

Staten Island

Its biggest cluster has more than 30 neighborhood associated with it, the second one has close to 15.

Food and public transport are common in both clusters, the differences are in the number and type of financial services presented

Between boroughs Staten Island is the first to have a common venu Bus Stop

Conclusions

- Transport services, financial services and public amenities as the differentiating factors between clusters in each borough.
- The multiculturality of New York as world's capital translate in the overwhelming diversity of restaurants offered in every borough.
- Further studies may include a comparison between the geographical distribution of the clusters and the differentiating venues, in specific public services, some analysis may come from a purely efficiency public transportation approach, and the interconnectivity between the private and public sector may be an interesting focus.