

APPLIED DATA SCIENCE CAPSTONE

BATTLE OF NEIGHBORHOODS

MOST PREFERRED BOROUGH FOR GLUTEN-INTOLERANT PEOPLE

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Introduction

Problem – Gluten-intolerant tourist wants to visit NYC for a trip. A borough where gluten-free food is easily accessible would be appreciated.

NYC boroughs – Bronx, Brooklyn, Manhattan, Queens, Staten Island.

Solution – Borough which has a maximum number and as well as high density of gluten-free restaurants.

Stakeholders - gluten-intolerant and would like to pay a visit to New York City.

Data acquisition and Cleaning

The number of gluten-free restaurants in all the boroughs

Data of the borough and neighborhoods with their respective geographical coordinates which are taken from :

- a. https://geo.nyu.edu/catalog/nyu_2451_34572
- b. https://cocl.us/new_york_dataset

Cleaning – Rows with data are used. Rows having null values are removed.

Selection of Features

Borough dataset – Neighborhood, Latitude and Longitude.

Gluten-free restaurants – Name, Address, Latitude and Longitude.

Methodology

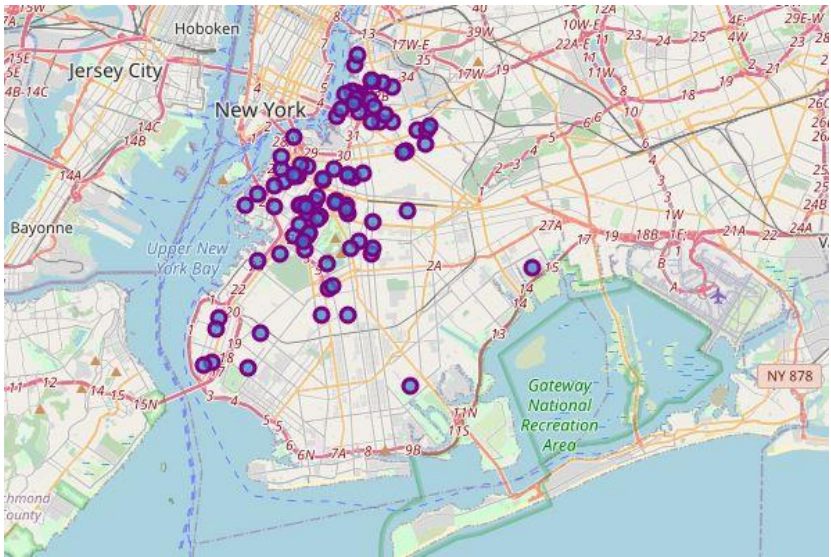
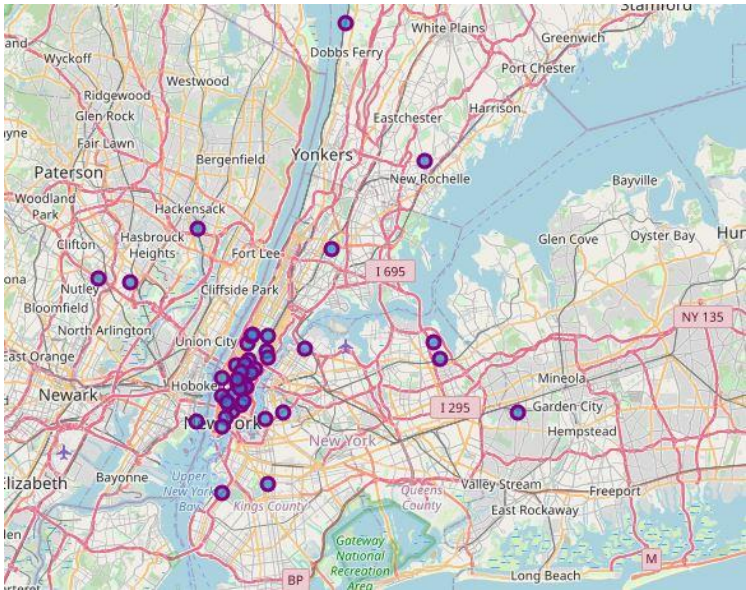
Obtaining the Borough with the maximum number of gluten-free restaurants - greater the number of restaurants, greater is the demand of gluten-free food in that particular borough.

Obtaining the Borough with the highest density of gluten-free restaurants - restaurants should be close to one another - calculating the average distance of the restaurants from the average of the coordinates.

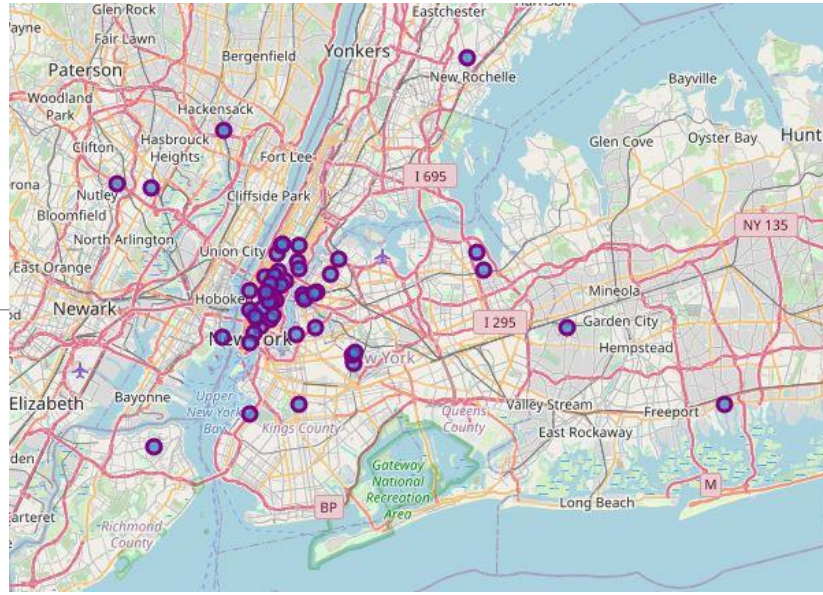
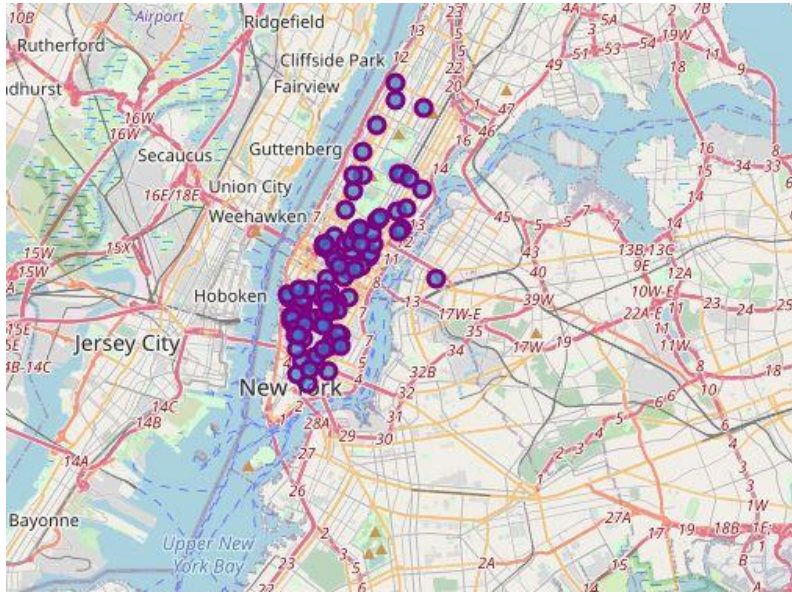
Results – maximum number of restaurants

Neighborhood	Number of gluten-free restaurants
Manhattan	164
Brooklyn	111
Staten Island	58
Queens	56
Bronx	47

Table.1. Number of gluten-free restaurants in a particular borough arranged in descending order. Note that these are depicting out of top 100 restaurants



Figs 1 and 2. Map of NYC showing the boroughs Bronx and Brooklyn depicting the number of restaurants shown as purple circles.



Figs.3 and 4. Map of New York City showing the borough Manhattan and Queens.

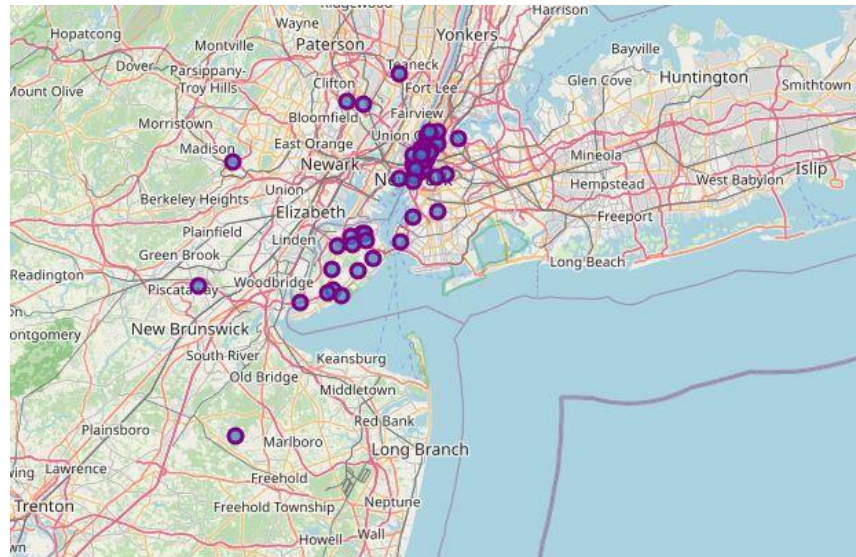
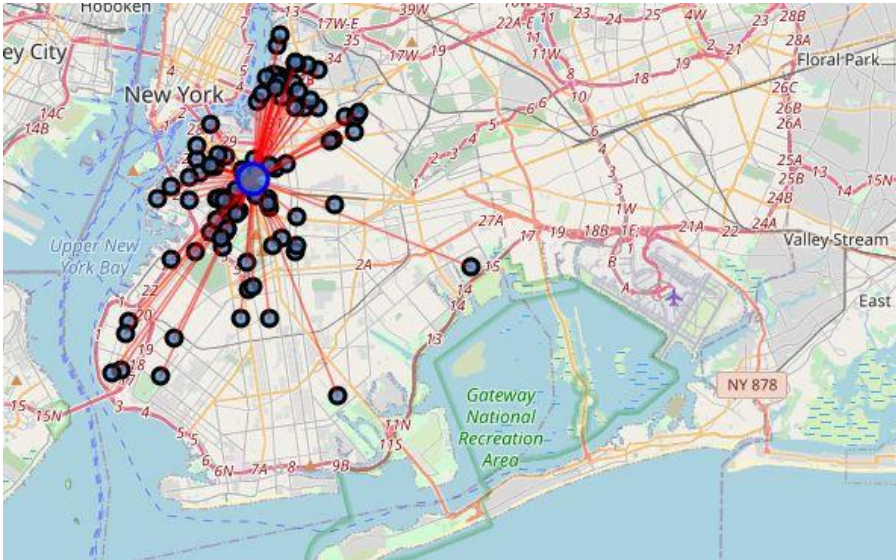
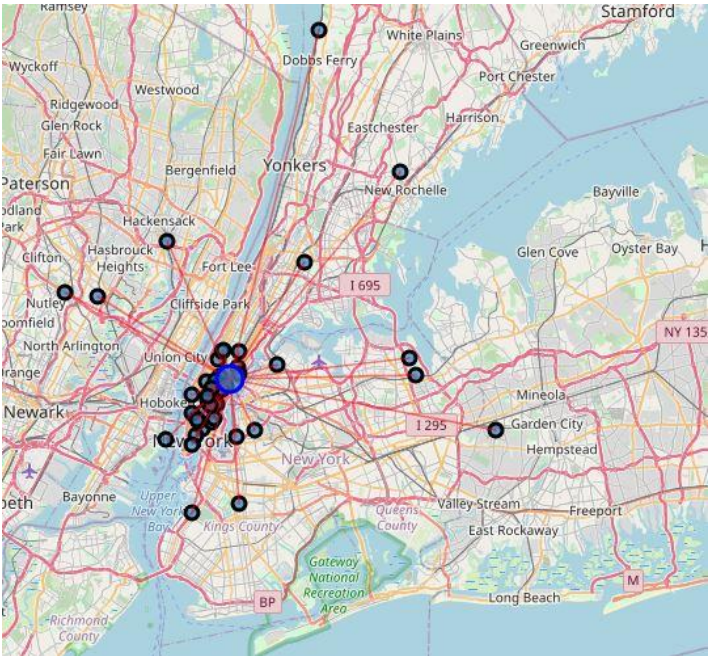


Fig 5. Map of New York City showing the borough Staten Island.

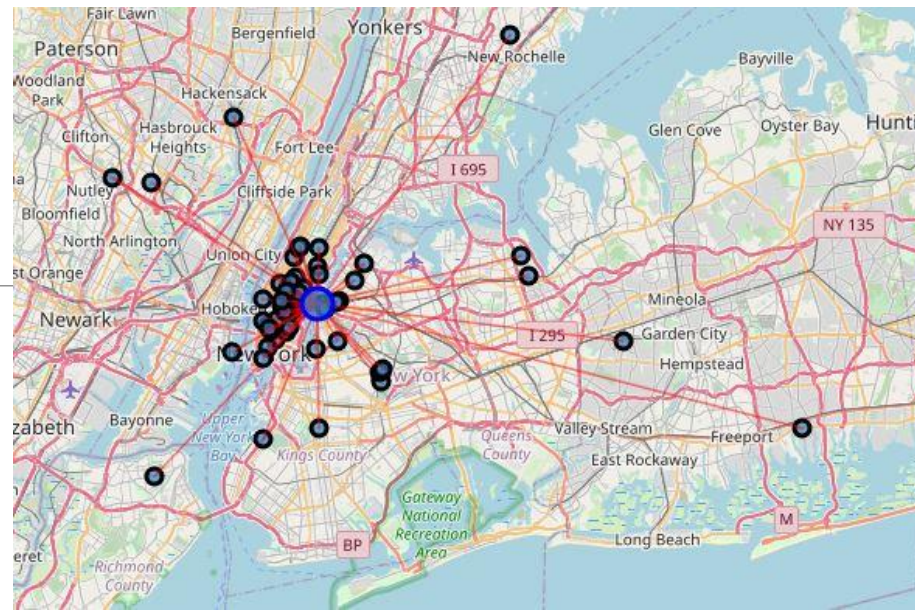
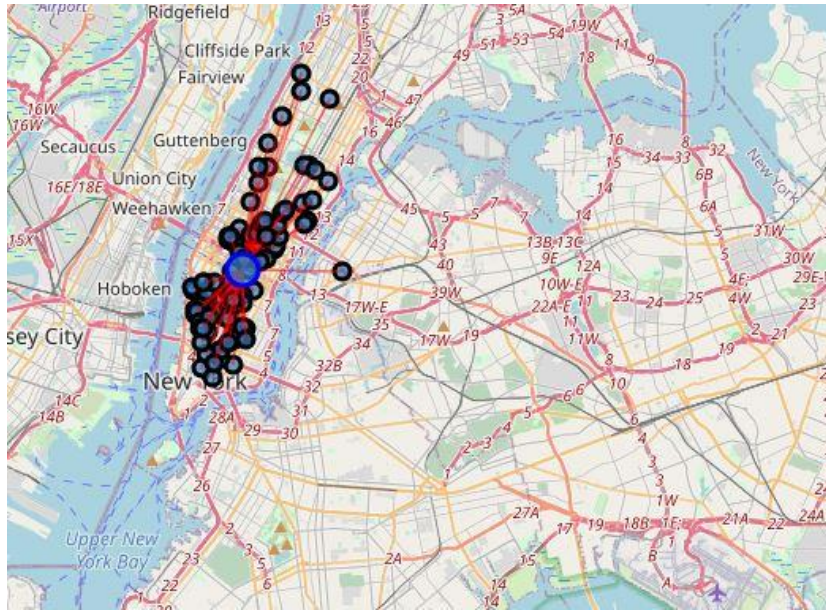
Results - *Maximum Density of restaurants*

Neighborhood	Average Distance
Manhattan	0.022651830023089826
Brooklyn	0.03232477411760373
Queens	0.04293349210337712
Bronx	0.053565619863168656
Staten Island	0.10015259081593658

Table 2. Average distance from average coordinates in a particular borough after outlier removal arranged in ascending order of distances.



Figs 6 and 7. Map of New York City showing the average distance from the average coordinates in Bronx and Brooklyn.



Figs 8 and 9. Map of New York City showing the average distance from the average coordinates in Manhattan and Queens.

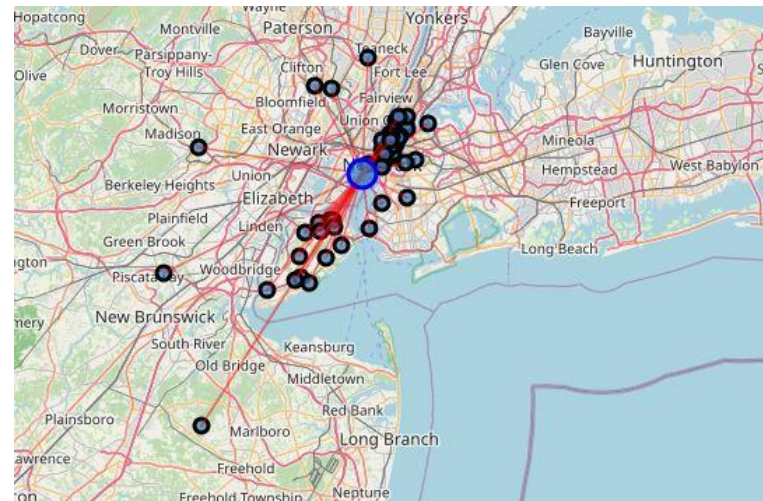


Fig 10. Map of New York City showing the average distance from the average coordinates in Staten Island.

Conclusions

From both the result sets, Manhattan is the best choice for a gluten-intolerant tourist who wants to visit New York City for a vacation.

Future Scope

Aspects like :

Ratings of the restaurants in each neighbourhood.

Type of cuisine such as Indian, Chinese or Italian etc.