

COURSERA CAPSTONE PROJECT

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# LOCAL COMPETITIVE LAND SCAPE FOR FOOD OUTLET OPENING IN MANHATTAN

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## INTRODUCTION

- ▶ Opening a new food outlet requires a right business strategy to have successful eatery business
- ▶ Location and Type of food outlet are crucial aspects of a business strategy
- ▶ They affect our ability to draw the customers
- ▶ Knowing exactly who we are up against is important before deciding about location and type of food offered
- ▶ It helps to determine whether a particular neighborhood is ripe for the picking or is over-saturated with competitors

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## OBJECTIVE

- ▶ To provide valuable insight on local competitive landscape to those who want to establish new food outlet/eatery in Manhattan.
- ▶ Given the location data of various types of food outlets in Manhattan, predict the common type of food outlets present in different parts of Manhattan.
- ▶ It will be quite useful while in deciding about the location and type of new food outlet

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## DATA ACQUISITION

- ▶ Obtain the data that contains the boroughs and the neighborhoods of the New York city
  - ▶ also contains the latitude and longitude of each neighborhood of a borough
  - ▶ are obtained from [https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572) in a '.json' file
- ▶ Using FourSquareAPI, obtain the data of food outlet/eatery of Manhattan borough
- ▶ Obtain a maximum of 1,000 food outlets present inside 15,000 meters radius of the neighborhood
  - ▶ also obtain the type of food outlet/eatery

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## DATA PROCESSING

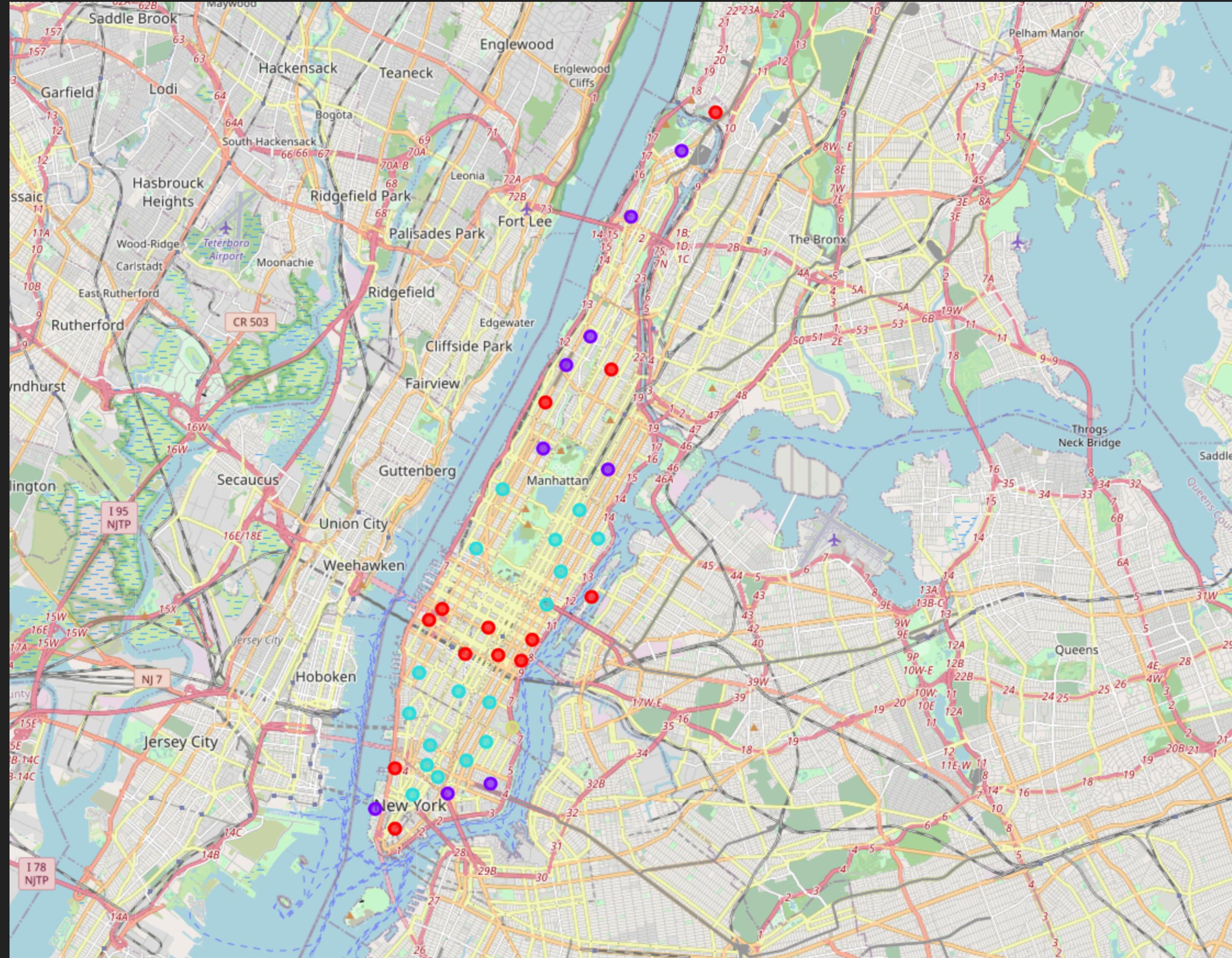
- ▶ For Manhattan borough of New York city, do the following:
- ▶ The food outlet data set of the borough is read into a pandas dataframe
- ▶ Perform one-hot coding on this dataframe based on the food outlet type
- ▶ Group the rows of this dataframe by neighborhood
- ▶ Take the mean of the frequency of occurrence of each type of food outlet
- ▶ Create new dataframe containing top 10 most common outlets present in each neighborhood

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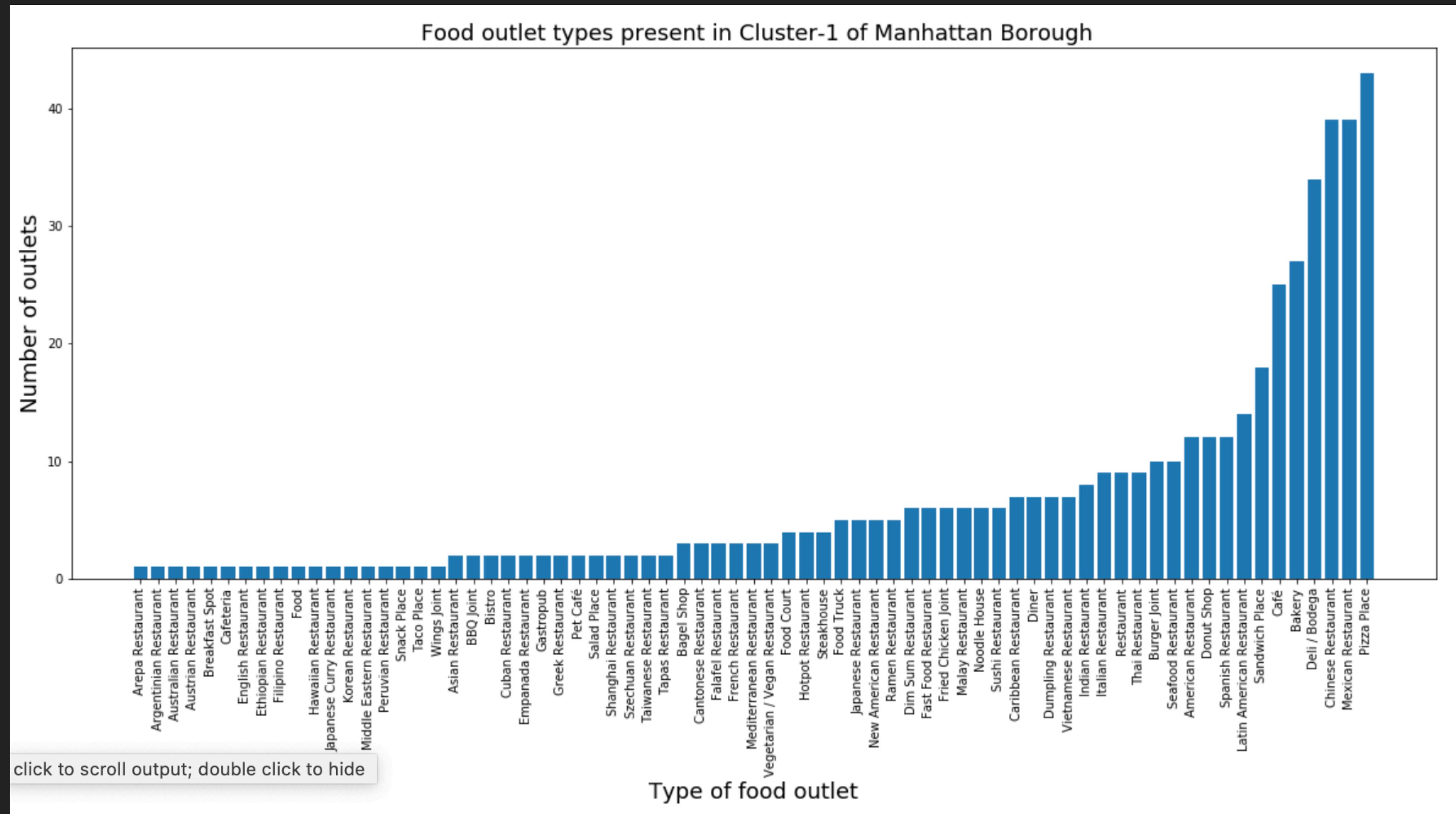
## DATA MODELING USING CLUSTERING

- ▶ Perform K-mean clustering on the dataframe containing top 10 common food outlets
- ▶ Perform clustering for different values of K
- ▶ Determine the optimum value using elbow technique
- ▶ Perform clustering of neighborhoods of a borough using optimum value of K
- ▶ Observe the type of food outlets present in each borough of NYcity
- ▶ Each cluster will have different types of common food outlets

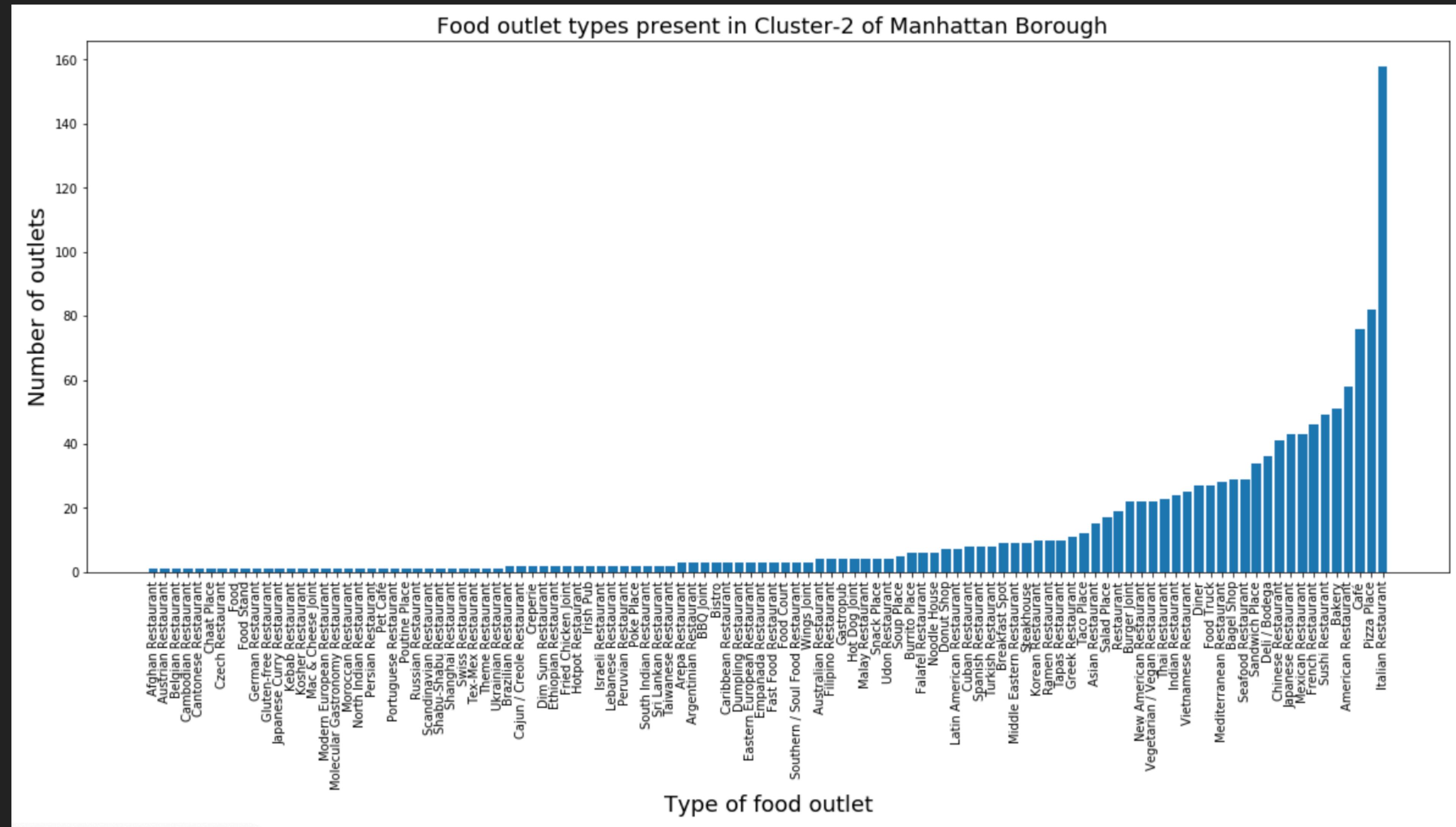
# CLUSTERING OF MANHATTAN



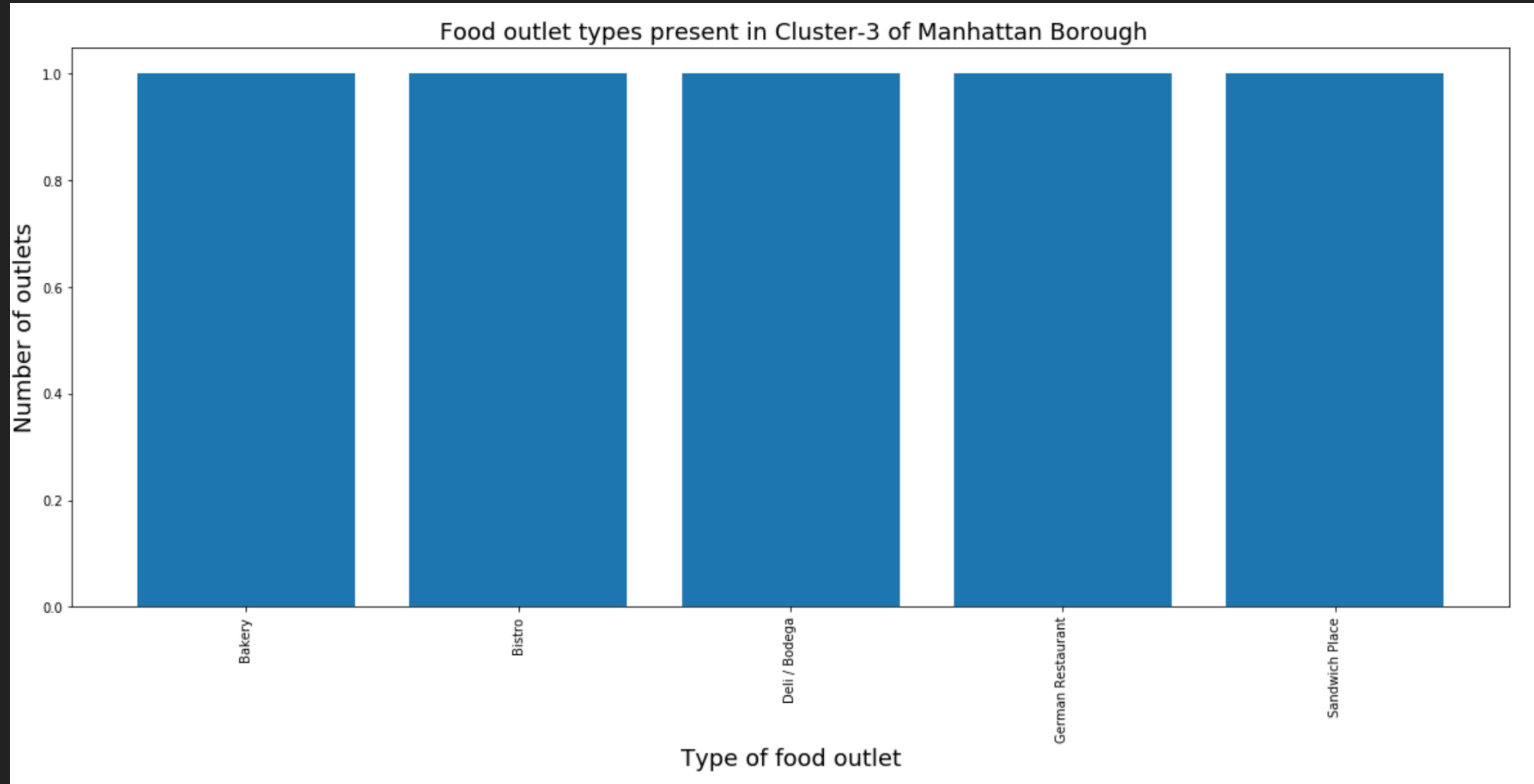
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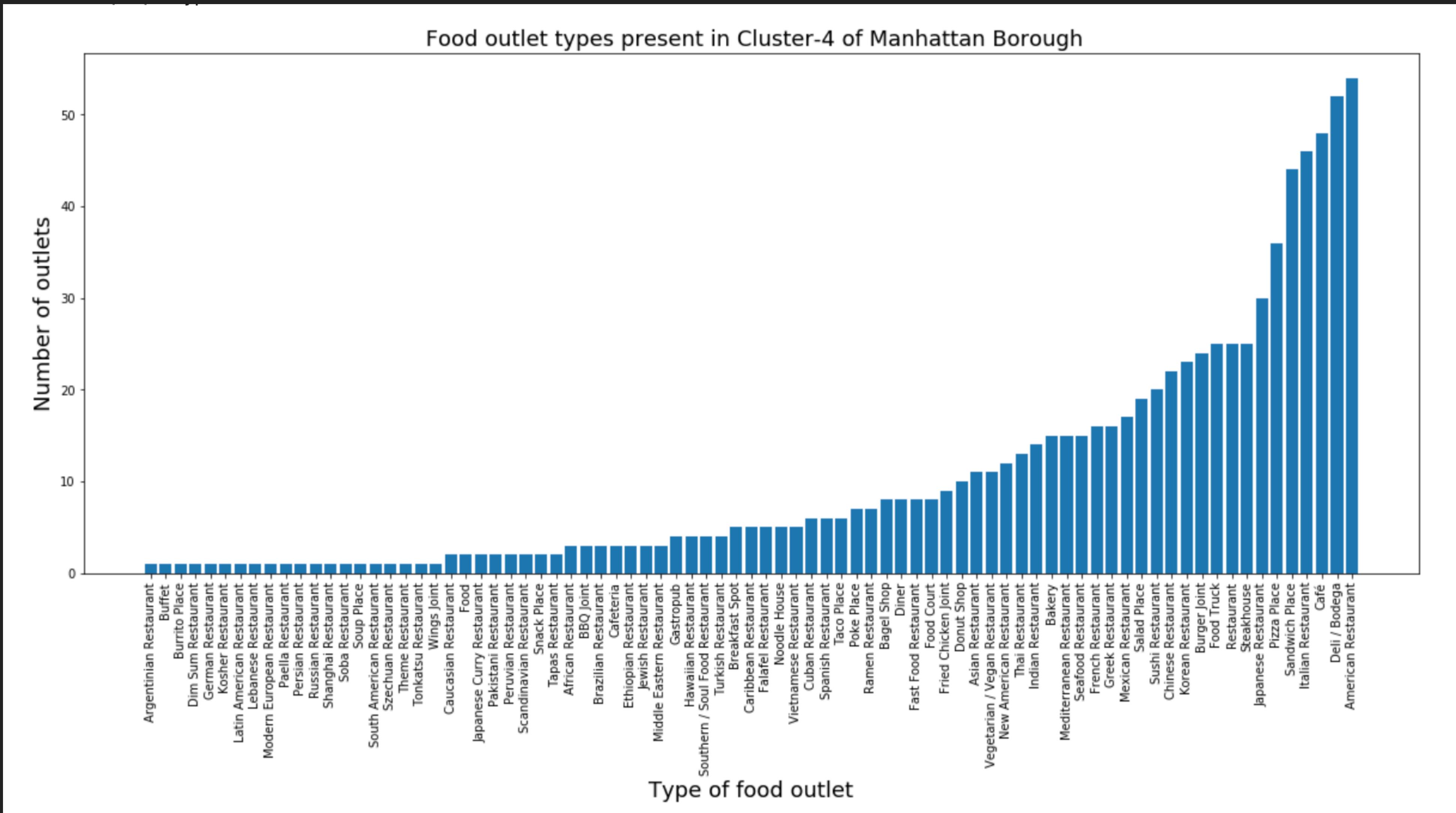
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# CLUSTERING OF MANHATTAN



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## CONCLUSION

- ▶ Neighborhoods of Manhattan borough in New York city has been partitioned into different clusters using K-means clustering algorithm
- ▶ Top 10 common food outlets of each neighborhood are used as a data point
- ▶ This analysis can be helpful for those who are planning to open a new food outlet in Manhattan
- ▶ It can help them in deciding the type and location of food outlet that provides them the competitive advantage.