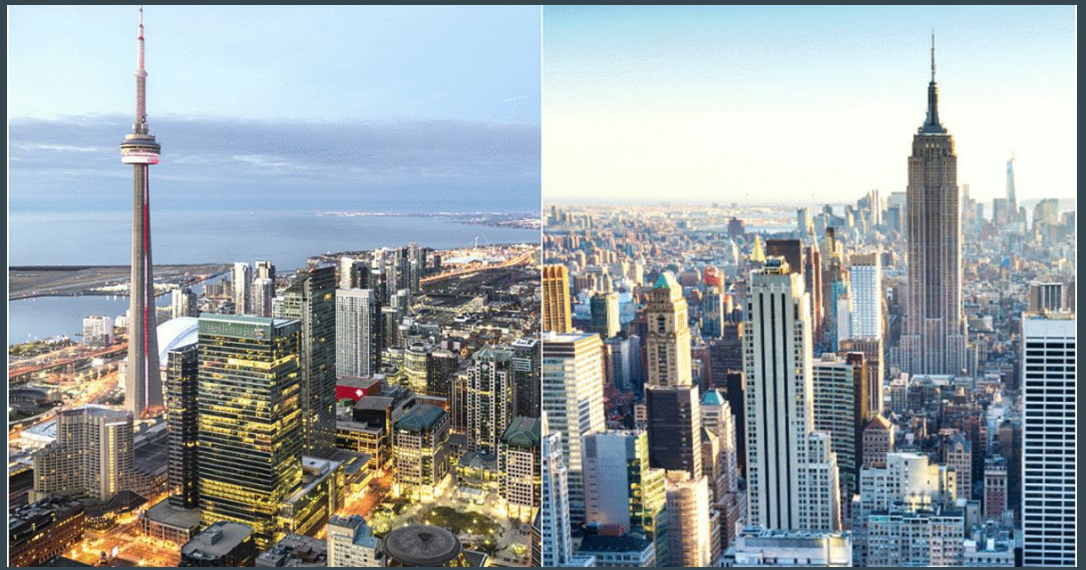
Clustering and comparing neighborhoods of New York and Toronto



Pramudith Karunarthna

- New york and Toronto are financial capitals of US and Canada
- Both are huge,diverse and cosmopolitan cities.
- Two higher GDP cities in the world
- People move between these two cities due to

-finding jobs

- Starting new business

- Travelling

- Shopping

Motivation

- Suppose a person wants to move from New York to Toronto for a job or start a new business. This person does not know anything about Toronto and he would like to move into a similar place where he lives now in New York
- Can we make a system that can help user showing to him similarities between two cities?

Objectives

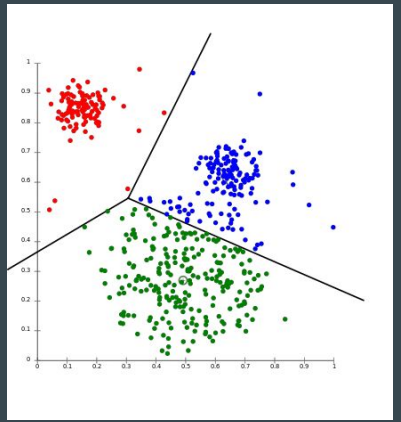
- Develop a system that will be able to show simillarities in terms of neighborhoods in order to support user to find simillar places in new city.
- Comparison simillarities and differences between neighborhoods of new york and Toronto

Approach

- Neighborhoods are downloaded from web
- Venus are requested using foursquare API
- One hot encoding used to categorize venus
- K-means algorithm used to find simillar clusters
- Elbow method used for find optimum K

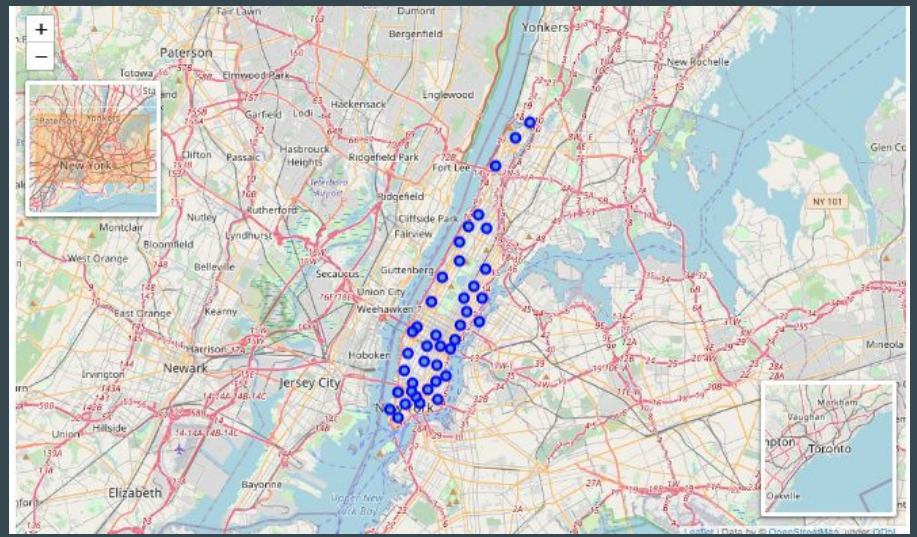
FOURSQUARE

WIKIPEDIA
The Free Encyclopedia



Results

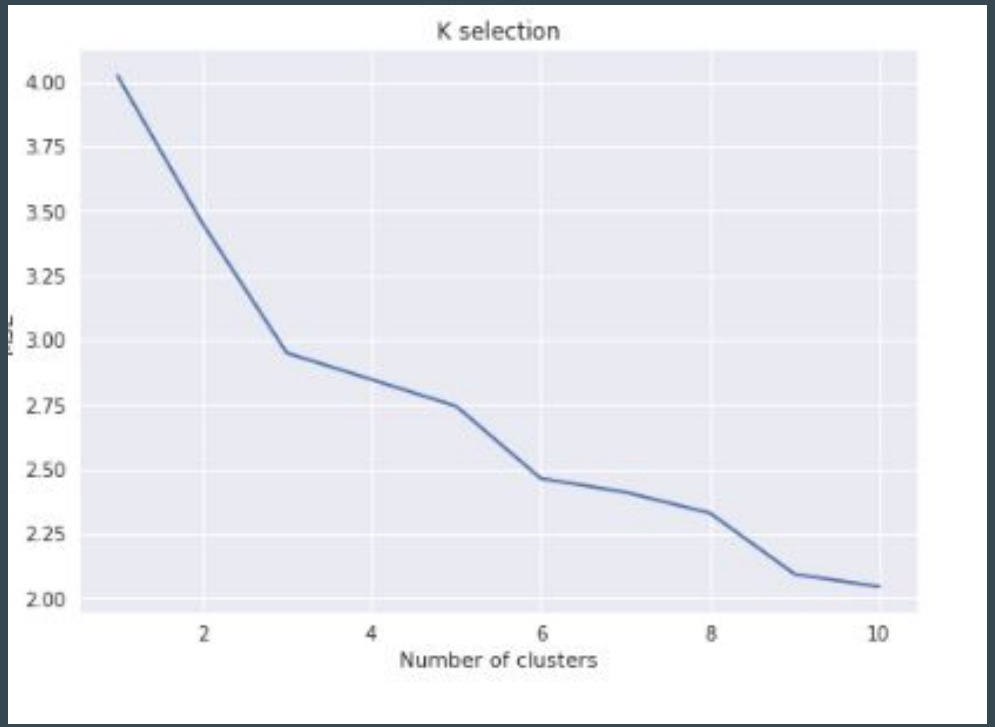
Geographical Location



Newyork

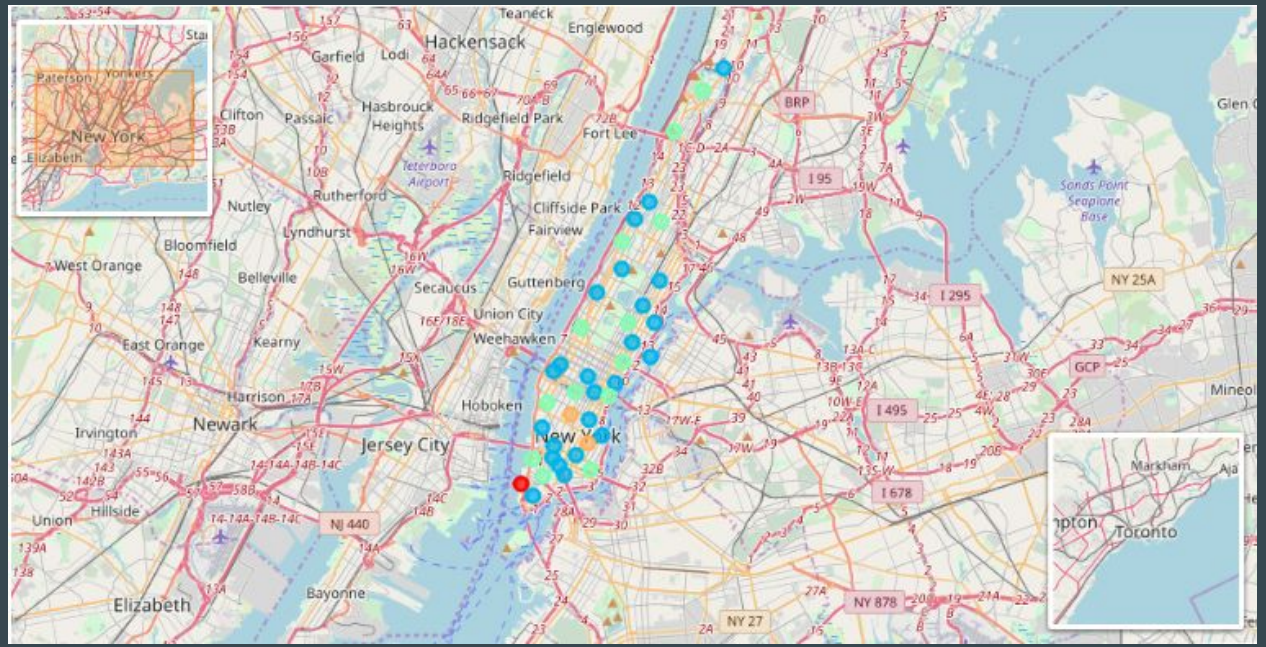
Toronto

Selection of K

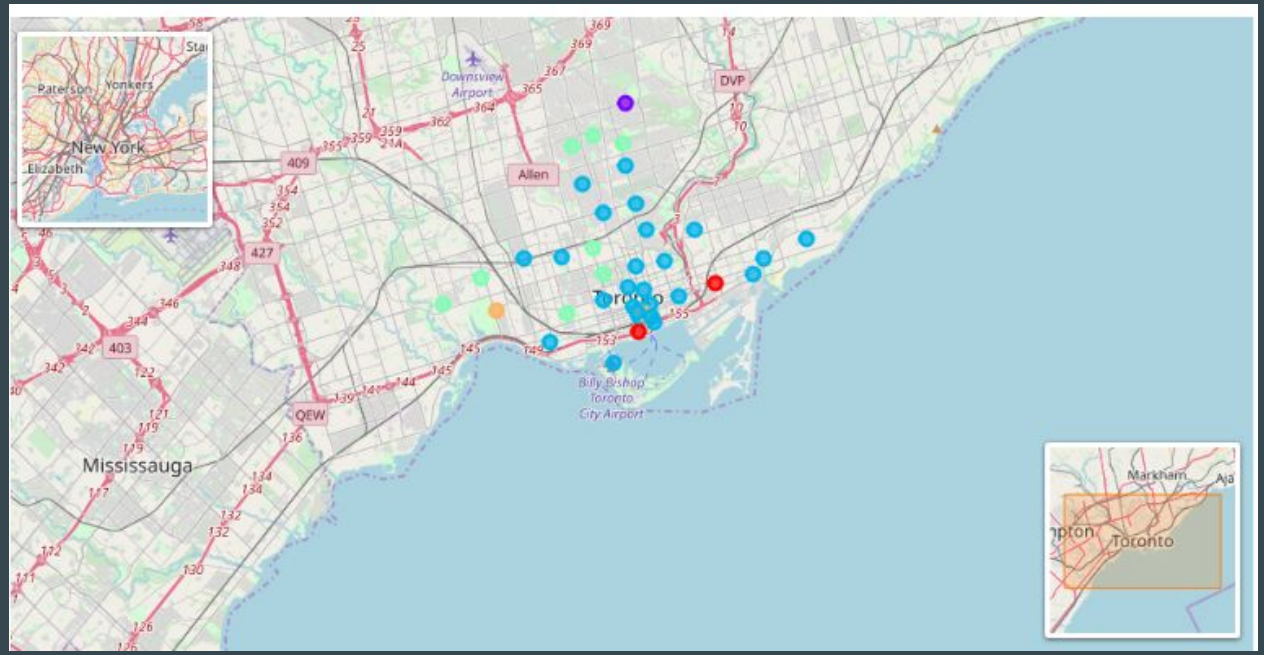


K=5 is selected

Clustered Geographical Locations



Newyork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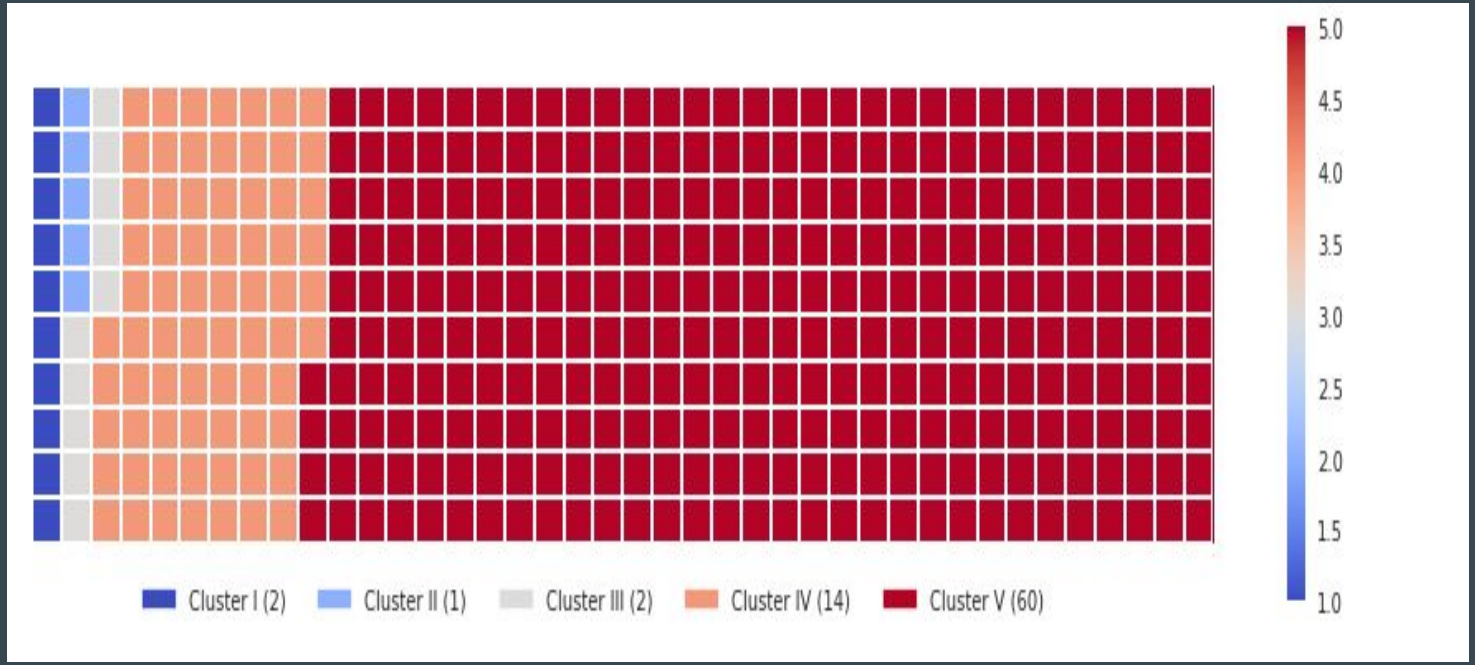
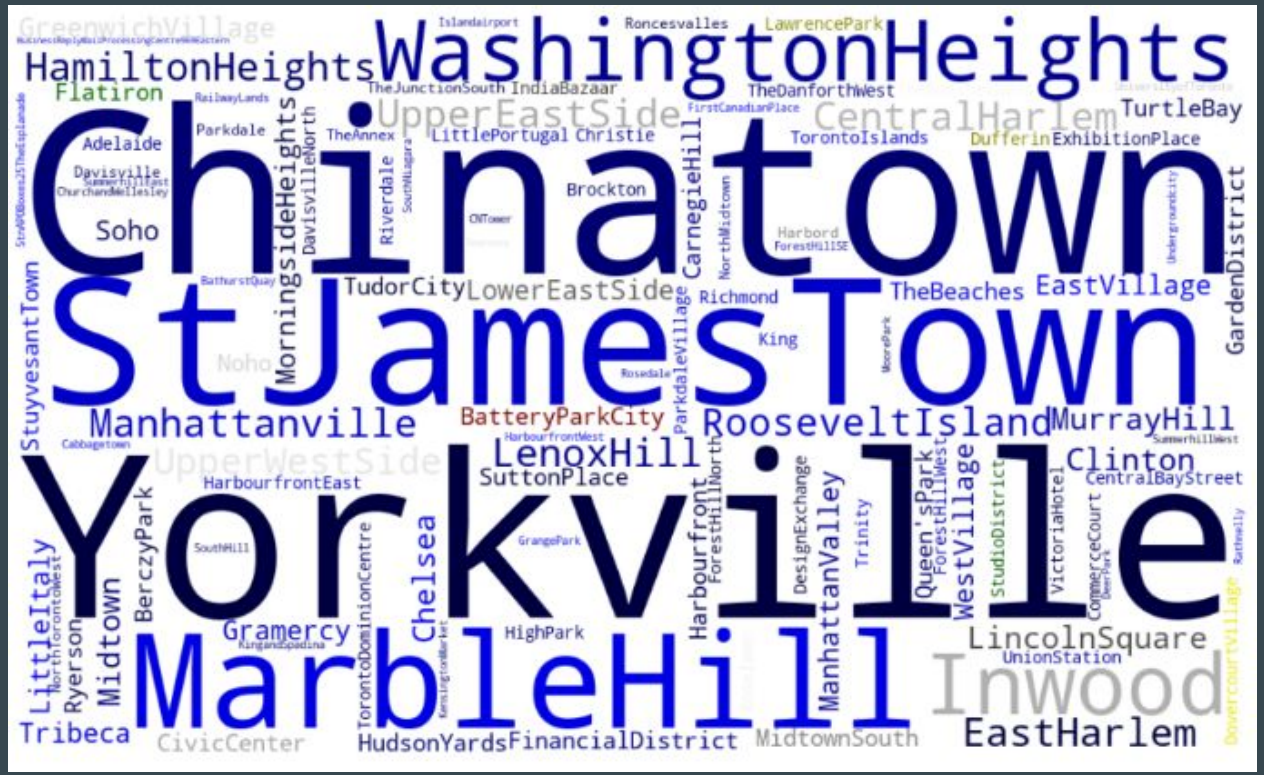
Yonkers
New York
Elizabeth
409
427
403
QEW
Mississauga
Downsview Airport
Allen
DVP
Billy Bishop Toronto City Airport
Markham
Toronto

Toronto

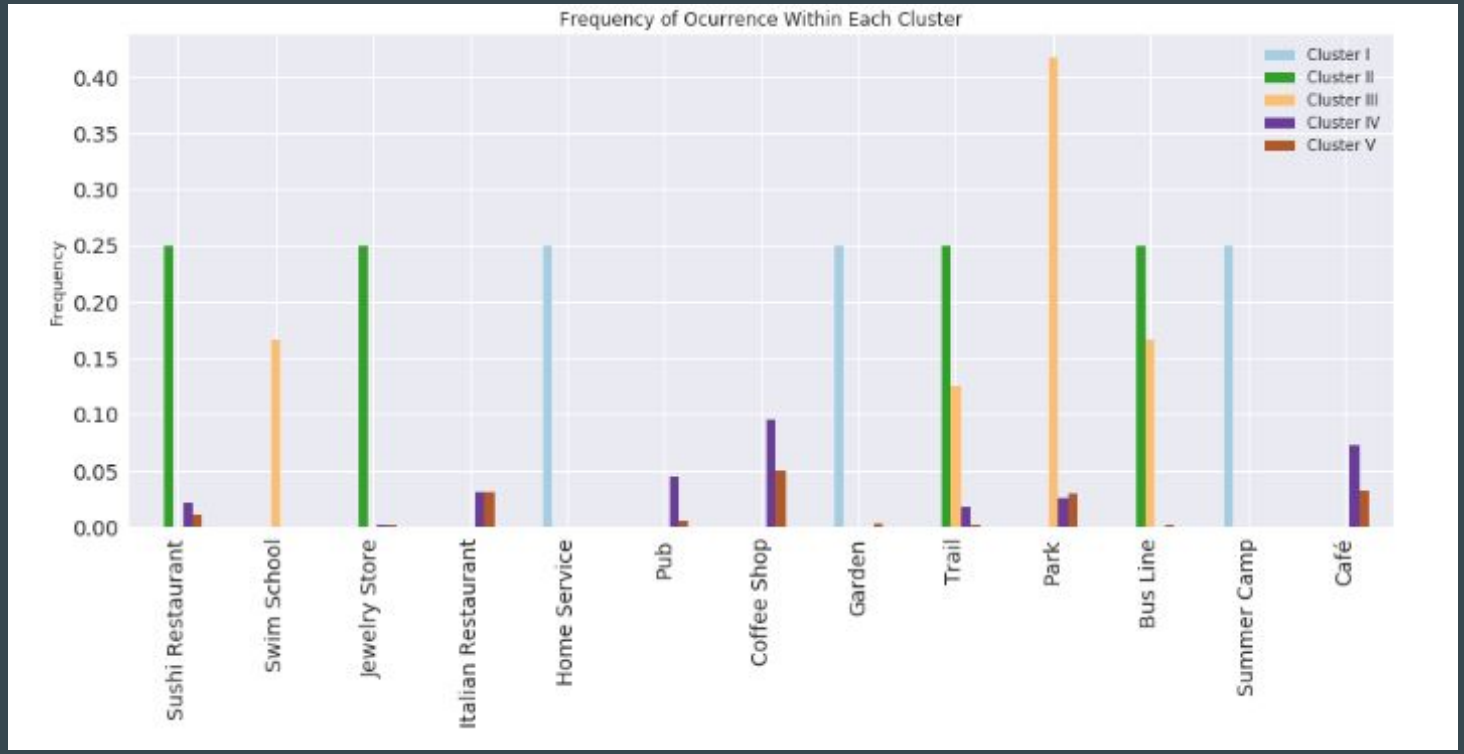
Waffle chart



Word cloud


GreenwichVillage
Islandairport
Roncesvalles
LawrencePark
WashingtonHeights
HamiltonHeights
Flatiron
RailwayLands
TheJunctionSouth
IndiaBazaar
TheDanforthWest
UpperEastSide
CentralHarlem
TurtleBay
FirstCanadianPlace
Parkdale
Adelaide
TheAnnex
LittlePortugal
Christie
TorontoIslands
Dufferin
ExhibitionPlace
Davisville
Chinatown
Brockton
Soho
MorningsideHeights
DavisvilleNorth
Riverdale
CarnegieHill
NorthMidtown
Harbord
ForestHillSE
GardenDistrict
StuyvesantTown
BathurstQuay
TudorCity
LowerEastSide
Richmond
TheBeaches
EastVillage
StJamesTown
King
Noho
ParkdaleVillage
Rosedale
WoodPark
Manhattanville
BatteryParkCity
RooseveltIsland
MurrayHill
Cabbagetown
HarbourfrontWest
LenoxHill
Clinton
UpperWestSide
SuttonPlace
CentralBayStreet
HarbourfrontEast
Yorkville
LittleItaly
BerczyPark
SouthHill
Chelsea
GrangePark
Harbourfront
ForestHillNorth
DesignExchange
Trinity
Queen'sPark
ForestHillWest
WestVillage
StudioDistrict
VictoriaHotel
CommerceCourt
DownPark
Midtown
Ryerson
NorthTorontoWest
TorontoDominionCentre
Gramercy
HighPark
ManhattanValley
LincolnSquare
UnionStation
Inwood
MarbleHill
Tribeca
CivicCenter
HudsonYards
FinancialDistrict
MidtownSouth
EastHarlem
DowercourtVillage
Rathnelly
SummerhillWest

Distribution of neighborhoods



Conclusion

- I: Neighborhoods that have around garden,Home services,Summer camp .
- II: Neighborhoods that have around sushi Restaurant,Jewellery store,Trail and Busline
- III: Neighborhoods that have around park,swim school.
- IV: Neighborhood that have around Cofe shops,pubs and cafes.
- V: Neighborhoods that have around Italian Restaurant.