Finding Optimal Locations at Taipei & New Taipei City to Open Convenience Store

Created by: sherryl93

Finding Optimal Locations are essential for stakeholder

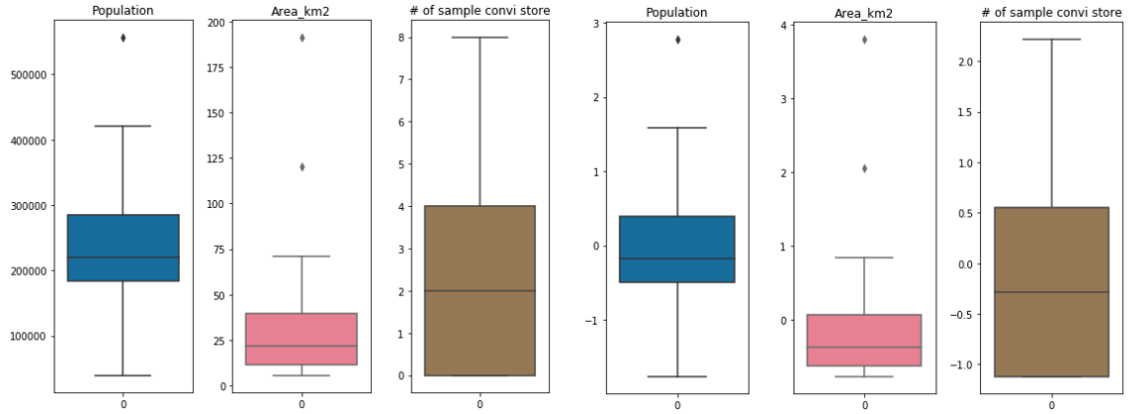
- Convenience store has been the most happening business in Taiwan
- Such variables are need to consider in order to get optimal profit:
  - Number of population in each district
  - Area size for each district
  - Sample number of existing convenience store
- Finding best districts location that could generate optimal profit will give stakeholder benefit

Data acquisition and cleaning

- Taipei and New Taipei City Districts lists, population and area size can be found in Wikipedia
- Approximate latitude and longitude for each district extracted using geolocator
- Number of existing of convenience store are extracted using Foursquare API
- removed districts that belong to mountain, beach or rural area.

Data engineering

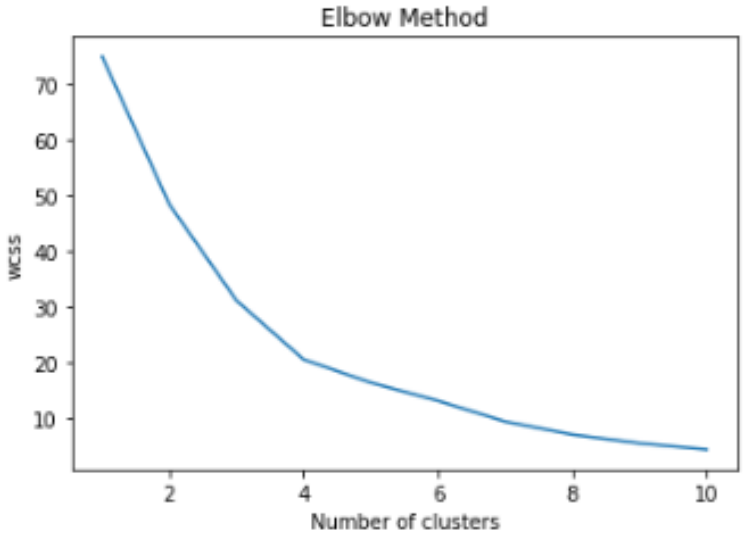
- For number of existing convenience store, only extract from radius 1km as sample of numbers
- sum all the sample number of existing convenience store for each district as one of the variables
- normalize the three variables {Population, area size and sample number of convenience store} to remove its ‘metrics’

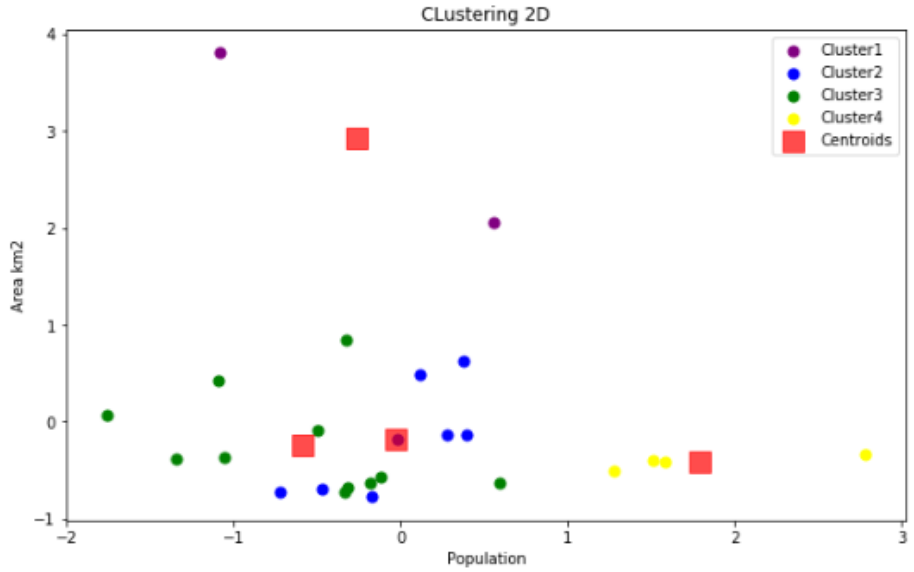


Before(left) VS After(Right) Normalization

Clustering Model

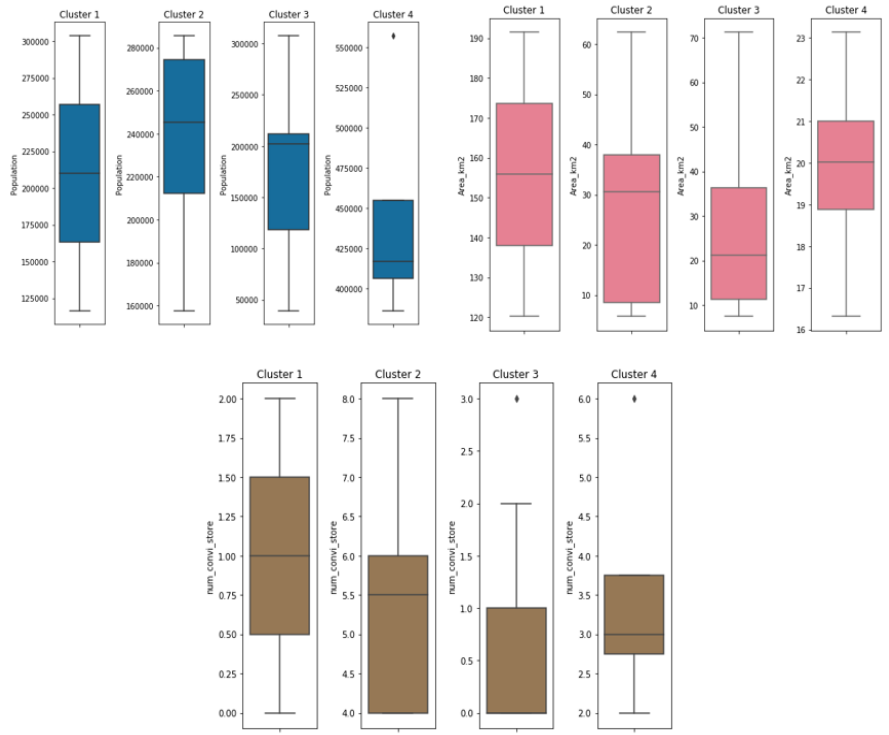
- Using Elbow method to determine best K
- Cluster districts into 4 different groups (K=4)





Analysis & Results

- Cluster Characteristics:
  - Cluster 1: lower mid of population, large area, lower mid number of existing convenience store
  - Cluster 2: upper mid of population, upper mid area, big number of existing convenience store
  - Cluster 3: small population, lower mid area, low number of existing convenience store
  - Cluster 4: large population, small area, upper mid number of existing convenience store
- Apply scoring method to get the best cluster:
  - give score 1-4 from low to big for area and population
  - give opposite score as 1-4 from large to small for number of available convenience store
- Best Cluster: Cluster 2



Cluster	Population	Area	# of store	Total
1	2	4	2	8
2	3	3	4	10
3	1	2	1	4
4	4	1	3	8

Conclusion

- Proposed best districts are: Yonghe District, Tucheng District, Zhongzheng District, Wanhua District, Wenshan District, Neihu District, Shilin District, Beitou District.

Future Directions

- For future research, we could add variables such as real estate availability, levels of noise / proximity to major roads and attractiveness of each location to get much accurate and narrower group of districts.