Coursera Applied Data Science Capstone Project

The Battle of Neighborhoods

Introduction

- Workspace refers to small premises provided, often by local authorities or economic development agencies, to help new businesses to establish themselves.

- In cities, they are often set up in buildings that are disused but which the local authority wishes to retain as a landmark. At the larger end of the spectrum are business parks, virtual offices, technology parks and science parks.

Business Problem

- Identify a convenient place to set up a shared workspace rental service in the city of Izmir, Turkey.

- According to the client the new workspace should be located in an area which is surrounded by other complimentary services such cafes and restaurants.

Target Audience

- The target audience for this project is a client who wants to set up a shared workspace rental business in the city of Izmir, Turkey. Based on the analysis that will be done in this project the clients will be handed locations at which they can setup their business.
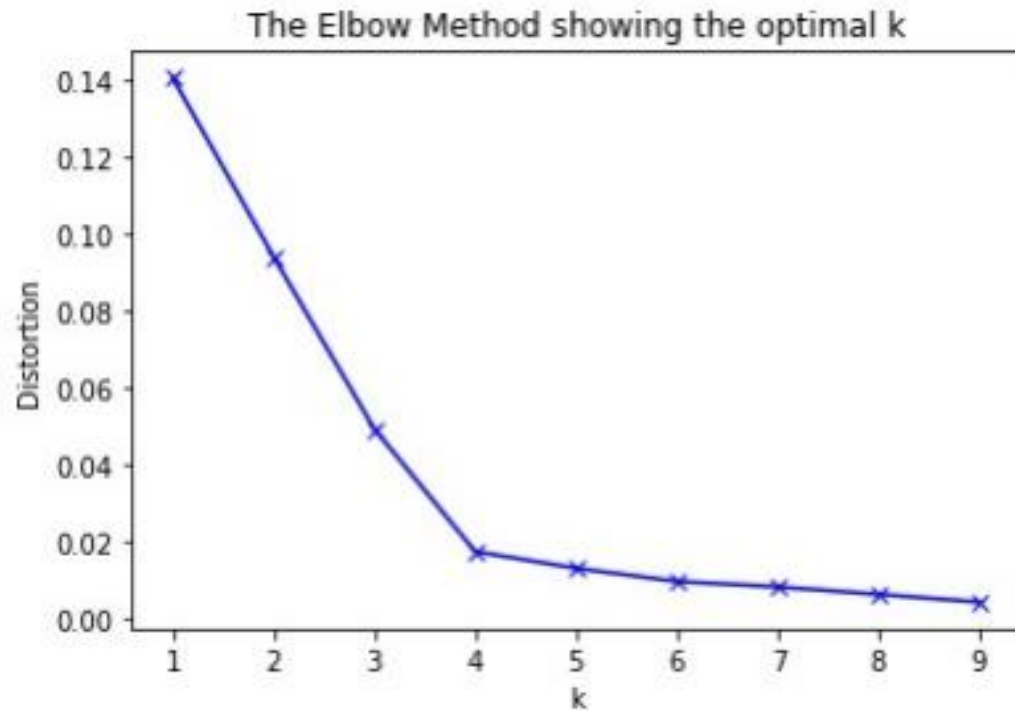
Data

- Atlasbig.com – Neighborhoods' list
- Geopy's Nominatim – Geographic Coordinates
- Foursquare API – Geospatial data of Venues

Methodology

- Data Collection
  - Web Scraping using BeautifulSoup.
  - Getting geographical coordinates of neighborhoods with Geopy's Nominatim
  - Getting venues and their locations from FourSquare API
- Data preparation and cleaning
- Data Analysis
- Modeling
  - K-Means Clustering
    - Elbow Method to show optimal K.
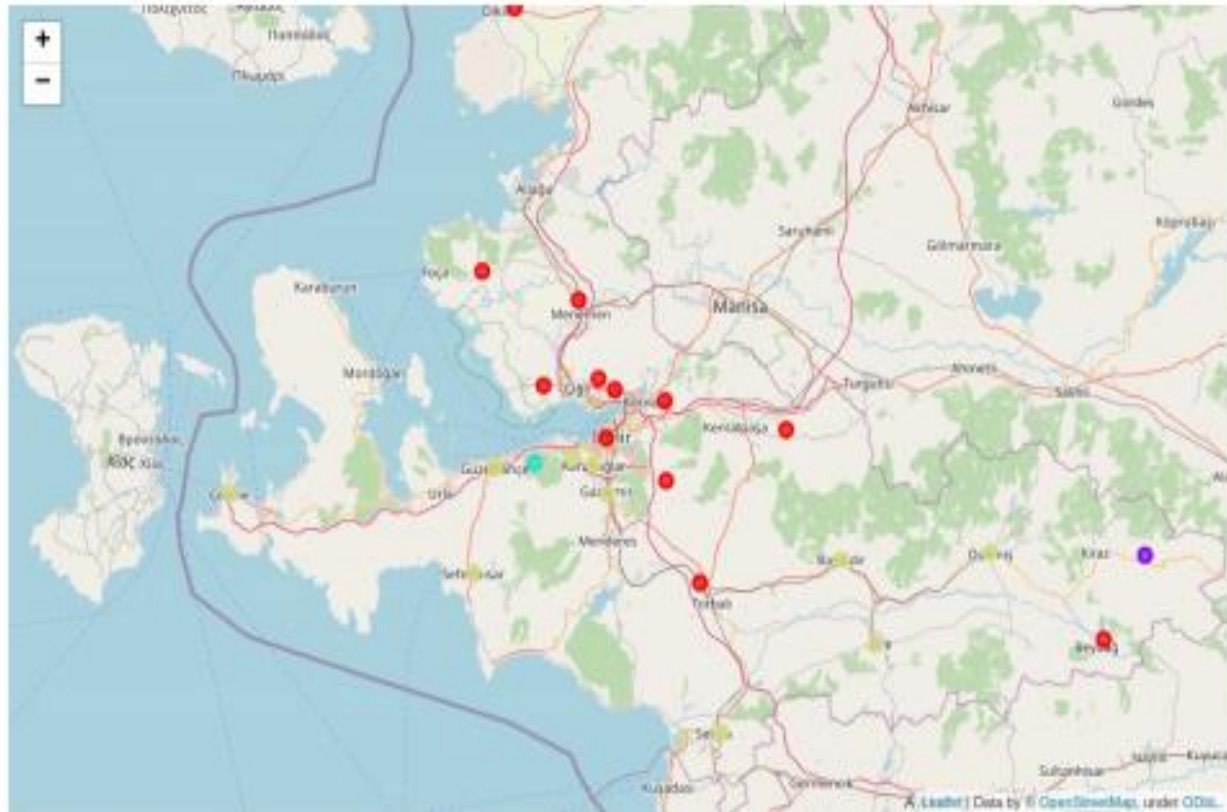- Data Visualization
  - Heat Map with Folium

Result

The Elbow Method showing the optimal k

- Run elbow method to identify optimum K.
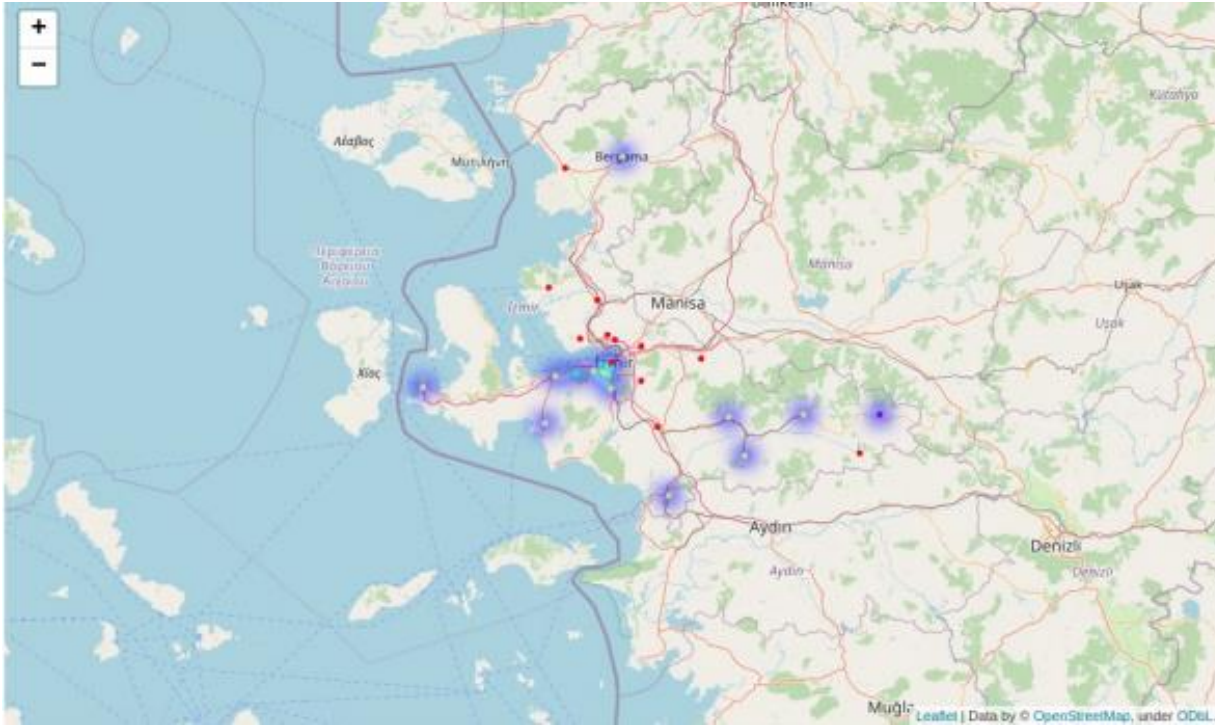 - The resulting K is 4.

Result

- Built a model and clustered neighborhoods.
  - Result shows cluster 0 and 3 are potential locations since they have various cafes and restaurants.

Result

- Performed data visualization with Heat-Map
  - Result shows densely populated cafes and restaurants in Konak Neighborhood which is found in cluster 0.

Discussion

- The use of Data science techniques along with Geo-spatial data acquired from Foursquare API has played a huge role in aiding the decision to set up a shared workspace rental business in Izmir, Turkey.

  - From acquiring the neighborhoods in the city, through fetching venues in each neighborhood, up to using a model to cluster and identify potential locations.

- One challenge that was encountered when carrying out this project was lack registered venues in cities.

- Other factors should also be considered when making business decisions.

Conclusion

- With the help of data science techniques and tools with the collaboration of Foursquare API, an optimal location for a shared workspace rental business in Izmir, Turkey was identified.