Food Venues Analysis in Tunis and Vienna

IBM DataScience Capstone project

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Introduction

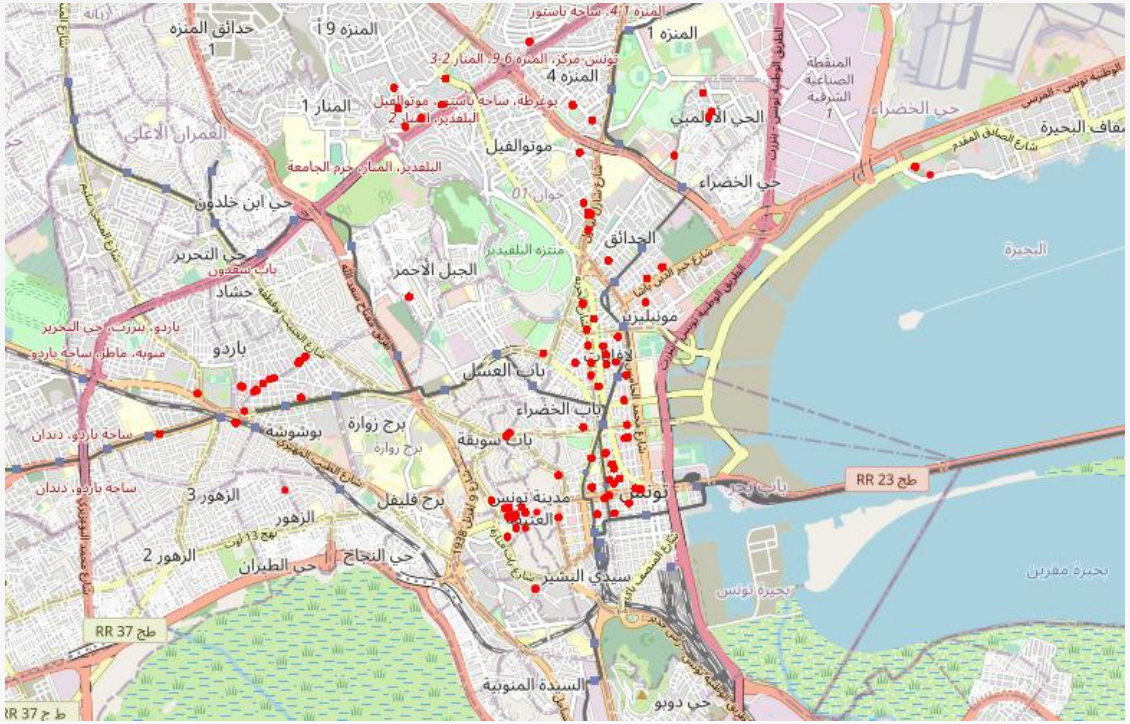
- Use datascience skills to answer the following questions :
- Which city provides easier access to food ?
- In which city, a new food store has less competitors ?
- Where in the city, one should launch his food business ?

Methodology

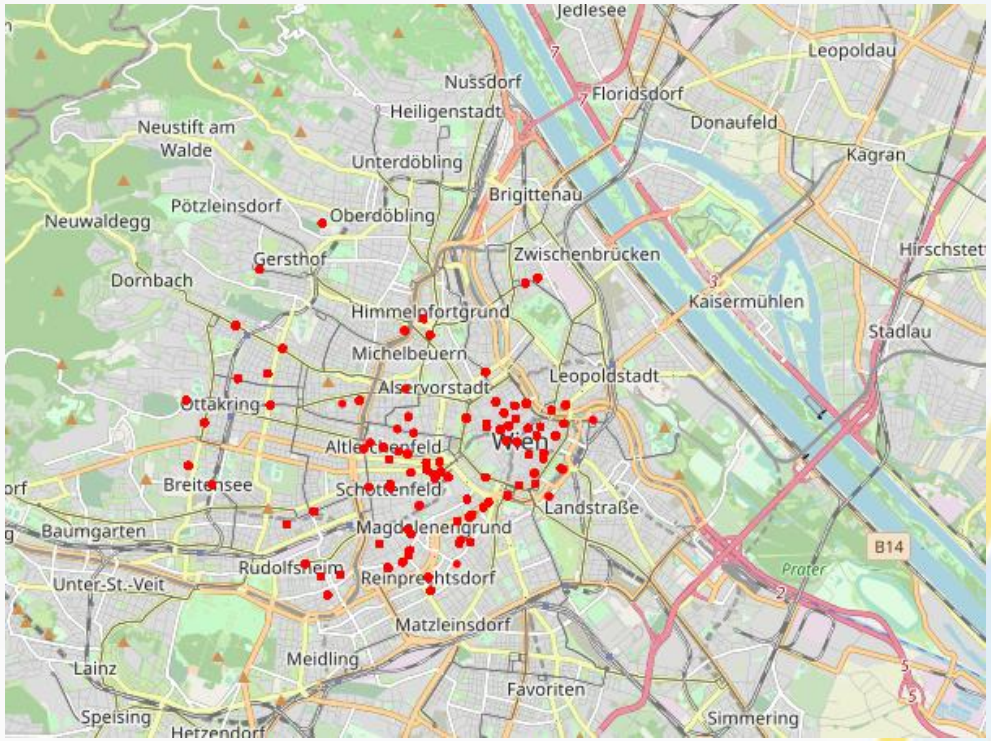
1. **Import Data:** use Foursquare API + Geopy
2. **Clean Dataset:** normalize JSON and make a pandas data frame
3. **Visualize Data:** use Folium to create maps
4. **Clustering:** calculate optimal number of clusters then clustering using Sklearn

Food venues comparison

Tunis

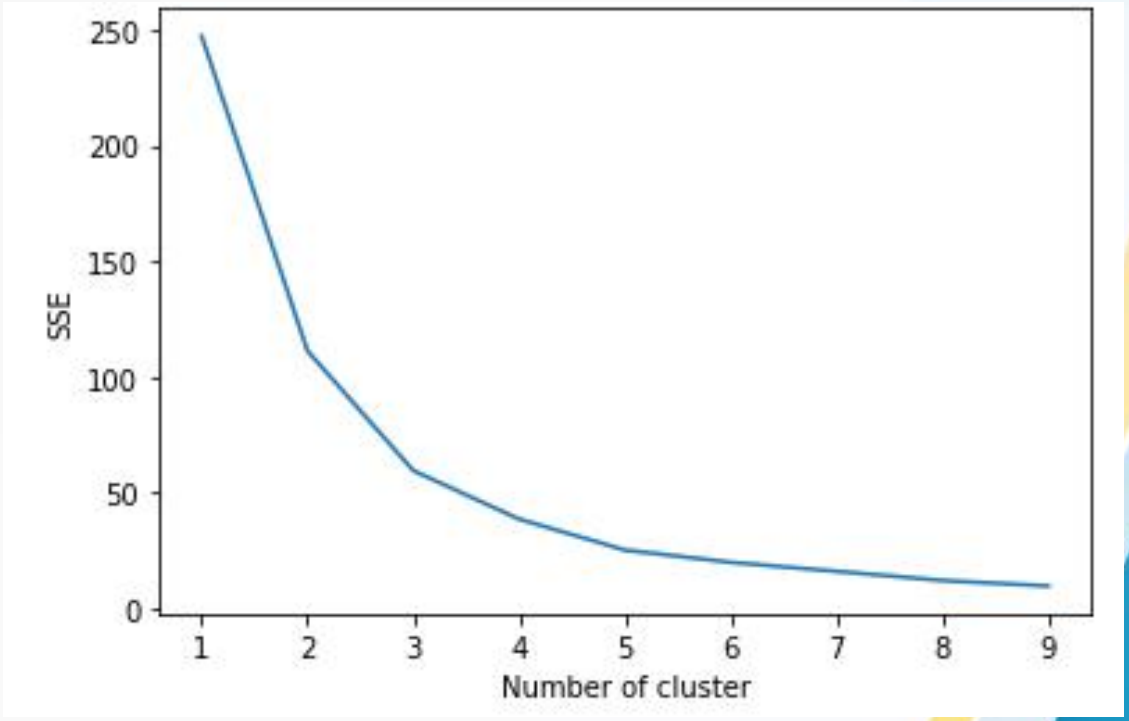


Vienna



Calculating optimal number of clusters

- **Elbow Method:** Squared-Root Sum of Error (SSE) vs Number of clusters
- The point of inflection (the “elbow”) indicates the optimal number of clusters



Calculating optimal number of clusters

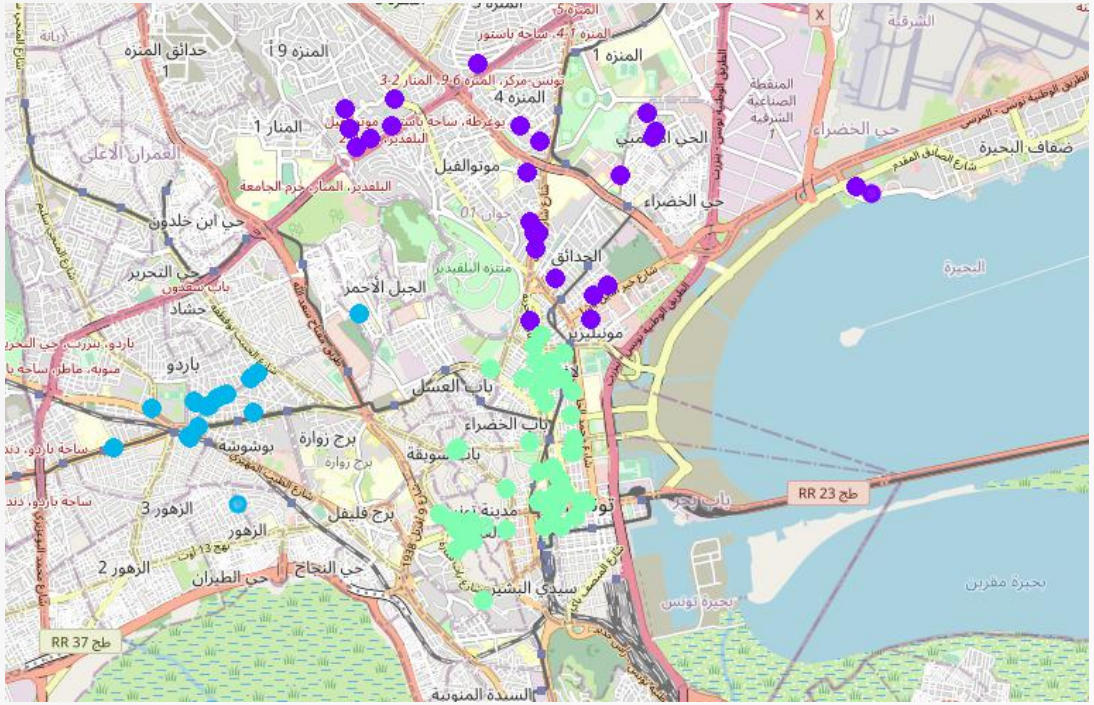
- **Silhouette Coefficient score** relates to a model with better-defined clusters.

```
For n_clusters=2, The Silhouette Coefficient is 0.514838021006832
For n_clusters=3, The Silhouette Coefficient is 0.5915796297089859
For n_clusters=4, The Silhouette Coefficient is 0.567363423484236
For n_clusters=5, The Silhouette Coefficient is 0.5947678468448009
For n_clusters=6, The Silhouette Coefficient is 0.6000634980279541
For n_clusters=7, The Silhouette Coefficient is 0.6008165752984389
For n_clusters=8, The Silhouette Coefficient is 0.6180266737545652
For n_clusters=9, The Silhouette Coefficient is 0.5780224289728945
For n_clusters=10, The Silhouette Coefficient is 0.6299583987983361
```

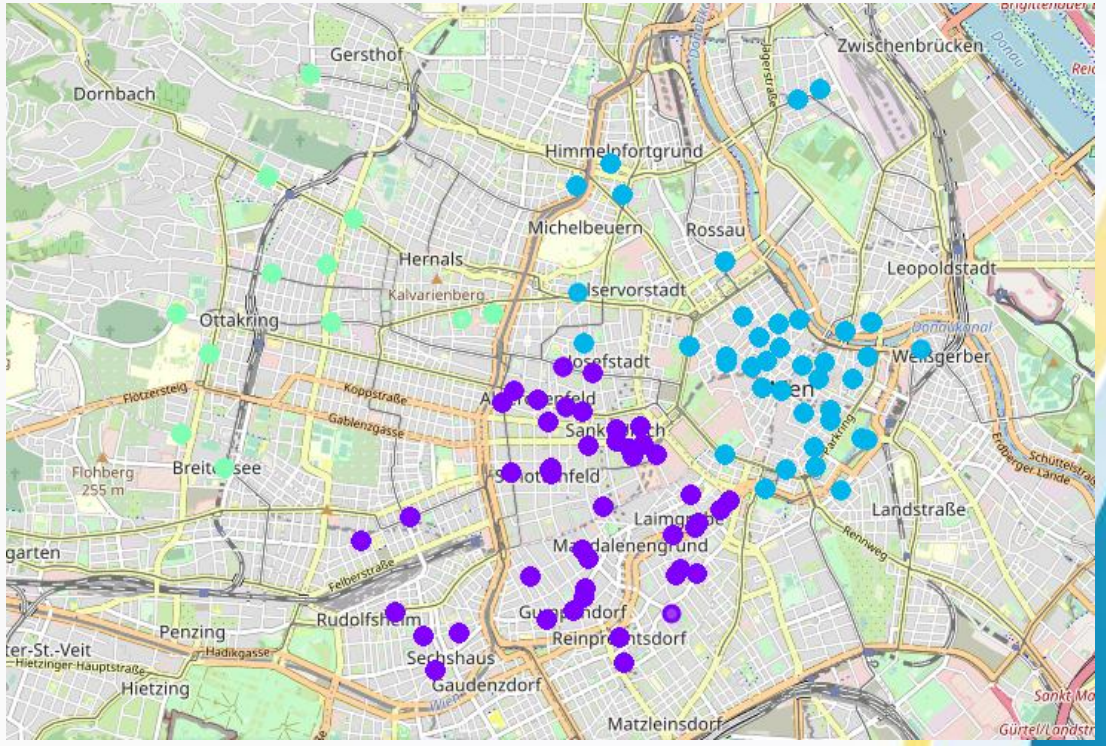
- => Using both methods, we get optimal **k = 3.**

Visualizing Clusters

Tunis



Vienna



Results

Tunis

- 1 big dense cluster in the center, and 2 smaller clusters located in the north and the west.
- Gap zones with no food venues.

=> Easy acess to food venues in the center

Vienna

- 2 big dense clusters in the center, and 1 smaller cluster in the west

=> Easy access to food everywhere

Conlusion

For a consumer :

- Vienna provides easier access to food venues than Tunis

For an investor:

- Tunis has more food store opportunities than Vienna (especially in the west and in the north)