



# **Destination USA: Where to live as a new immigrant in USA**

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# INTRODUCTION/BUSINESS PROBLEM

- Every year a number of immigrants become new U.S citizens
- In the 2018 fiscal year 163,000 immigrants became new citizens
- The diversity visa program makes available 50,000 immigrant visas every year across the globe
- Some of these immigrants migrate to the U.S without having relatives that they can associate with.

# Project Goal

- The goal of this project is to develop an analysis that compares neighborhoods in different U.S cities to identify those with a cultural composition that will be attractive to a specific group of immigrants with a similar cultural background.

# Data

- Data was obtained for neighborhoods in Washington DC, Baltimore, Maryland and Des Moines, Iowa from the following sources
- Des Moines, Iowa: <https://www.areavibes.com/des+moines-ia/neighborhoods/>
- Baltimore, Maryland:  
[https://en.wikipedia.org/wiki/List\\_of\\_Baltimore\\_neighborhoods](https://en.wikipedia.org/wiki/List_of_Baltimore_neighborhoods)
- Washington, DC:  
[https://en.wikipedia.org/wiki/Neighborhoods\\_in\\_Washington,\\_D.C.](https://en.wikipedia.org/wiki/Neighborhoods_in_Washington,_D.C.)

# Neighborhood Data

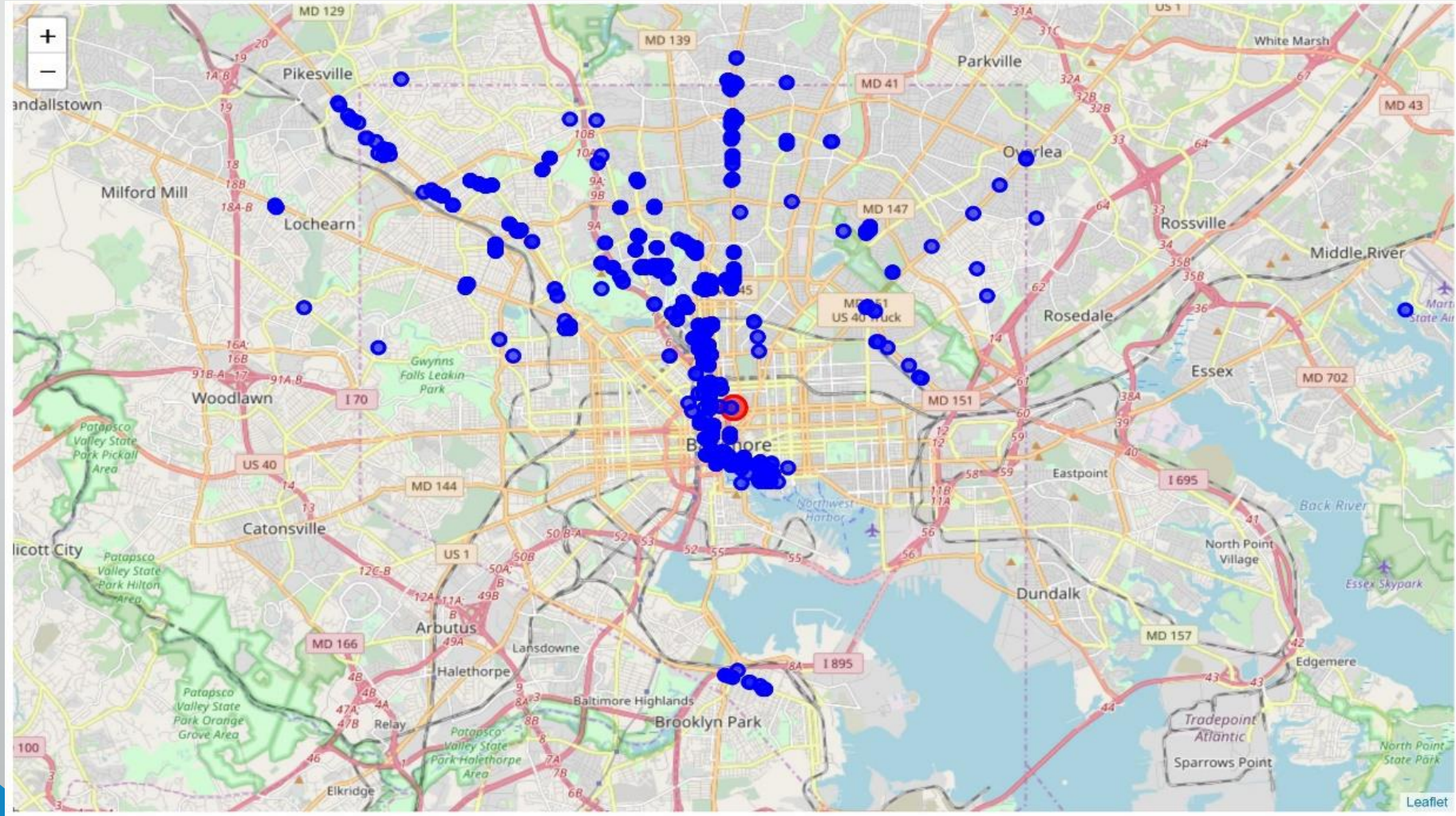
- Baltimore has 308 neighborhoods, Des Moines has 53 neighborhoods and Washington DC has 138
- For Baltimore and Washington DC 100 neighborhoods each were used to minimize density of plots on the maps.
- The Python geocoder returned coordinates for 81 Baltimore neighborhoods, 24 neighborhoods for Des Moines and 98 neighborhoods for DC.
- These coordinates were then passed to the Foursquare API to return venues of interest.

# METHODOLOGY

- For our Foursquare API call, we looked within a radius of a 1000 meters from our location coordinates and returned 300 venues
- We filtered the data returned from Foursquare based on key words in the venue category that were identified
  - Venue Categories: Restaurant, Market, Pizza, Food and Sandwich
- For Baltimore, 249 number of unique categories were returned. 190 unique categories and 323 unique categories were returned for Des Moines and Washington DC respectively.

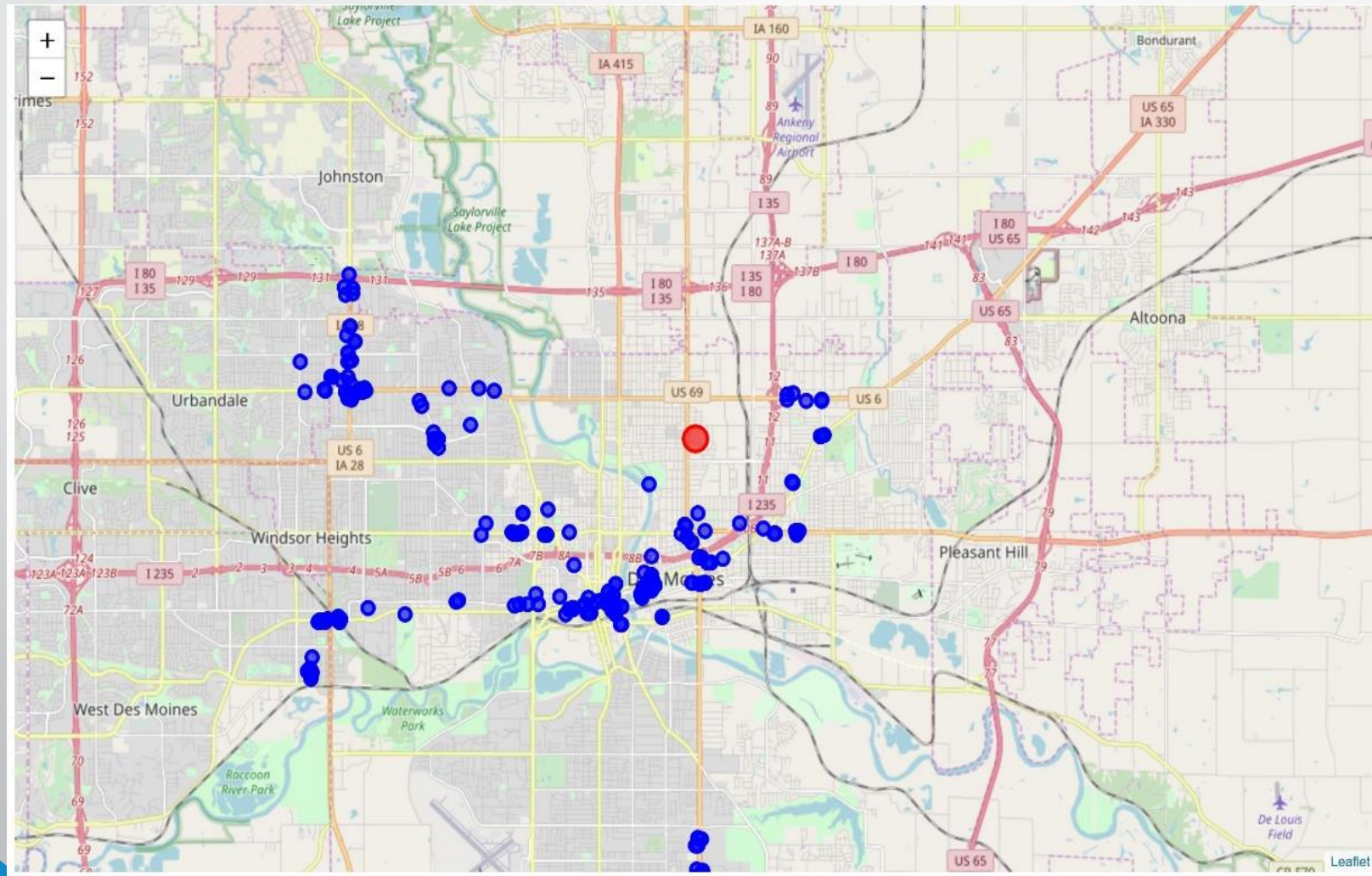


# Map of Baltimore venues



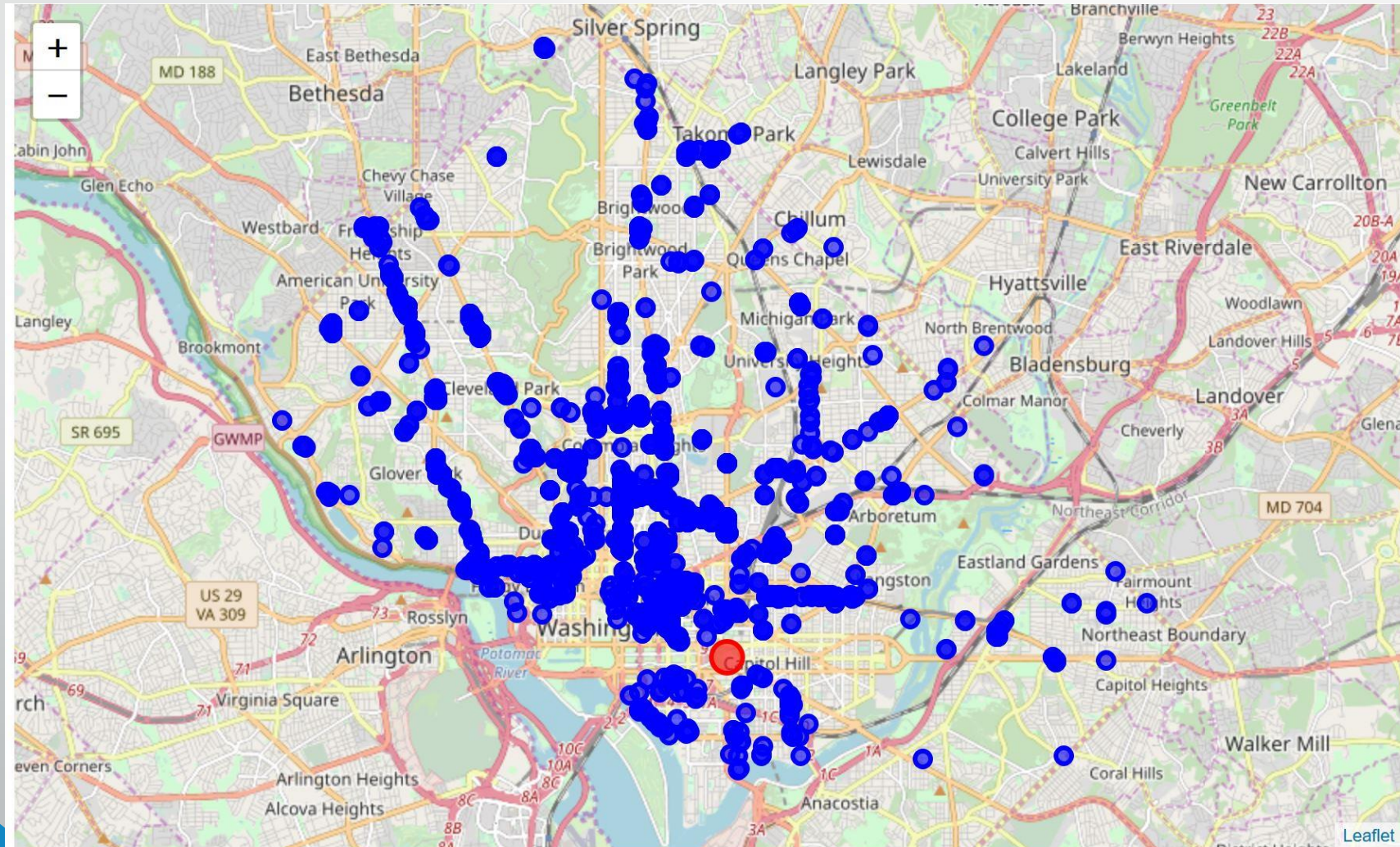


# Map of Des Moines Venues





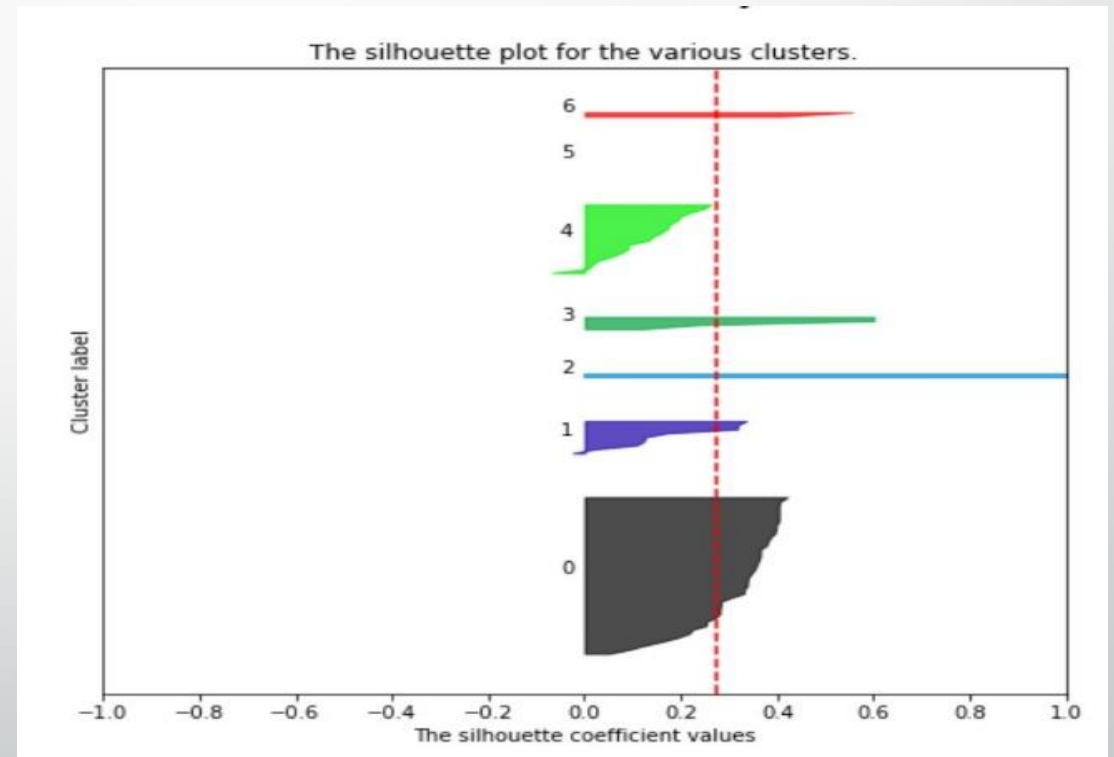
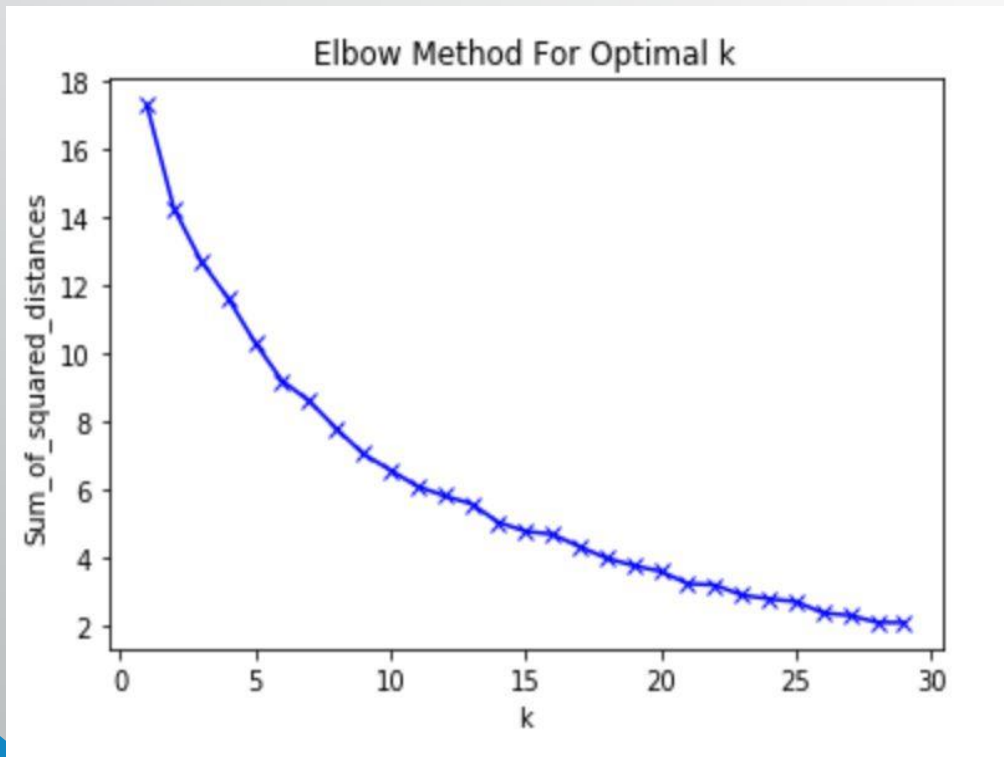
# Map of Washington DC Venues



# METHODOLOGY

- K-means clustering was used to generate clusters of the different neighborhoods based on the venues returned by Foursquare.
- Clusters were thus based on restaurants or eateries in these neighborhoods
- To determine the optimum number of K we used:
  - Elbow method
  - Silhouette analysis
  - Calinski-Harabaz method
- We also explored Density Based Clustering to see if it eliminates the shortcomings of K-means

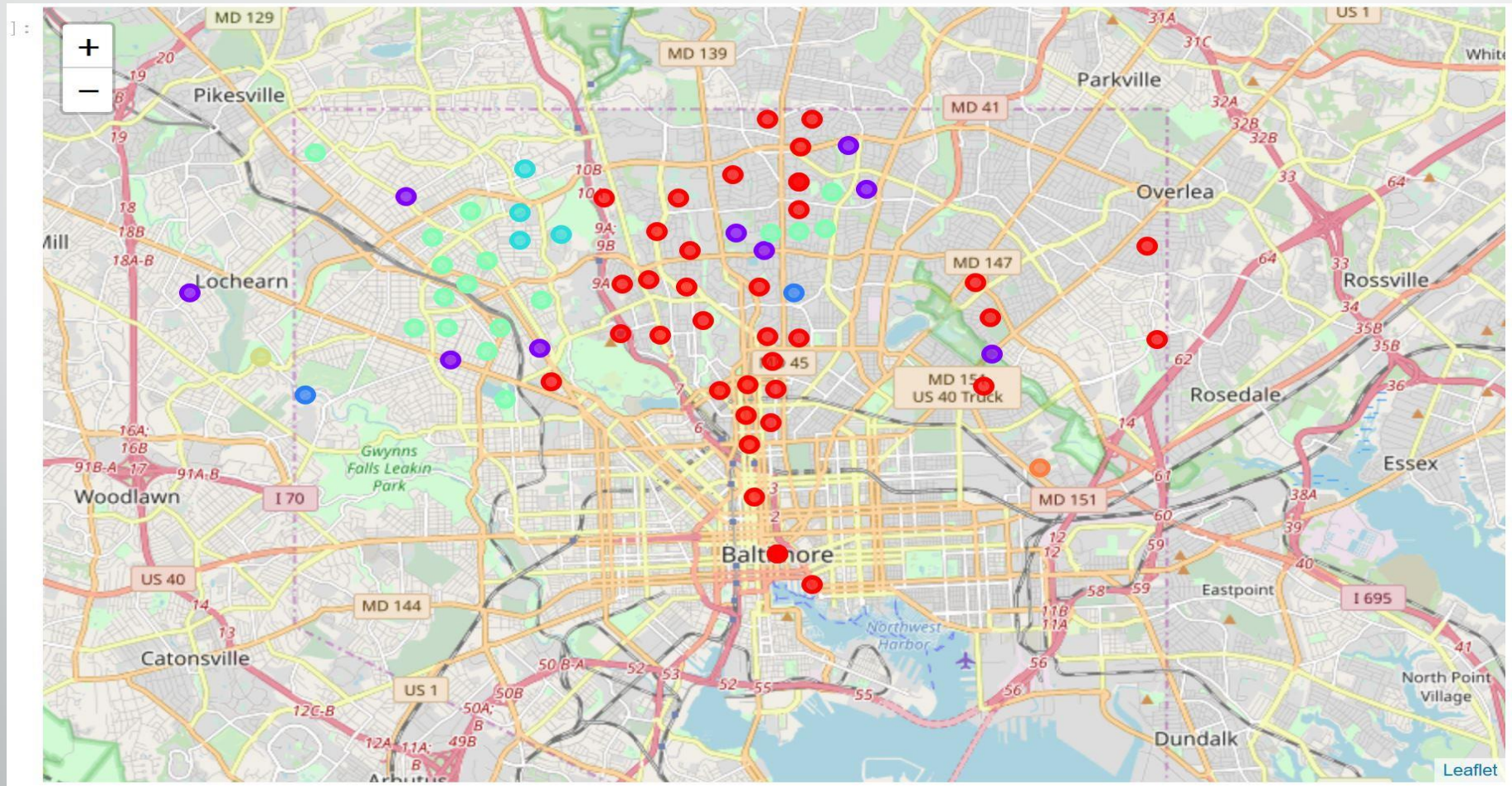
# Selecting K for Baltimore venue data



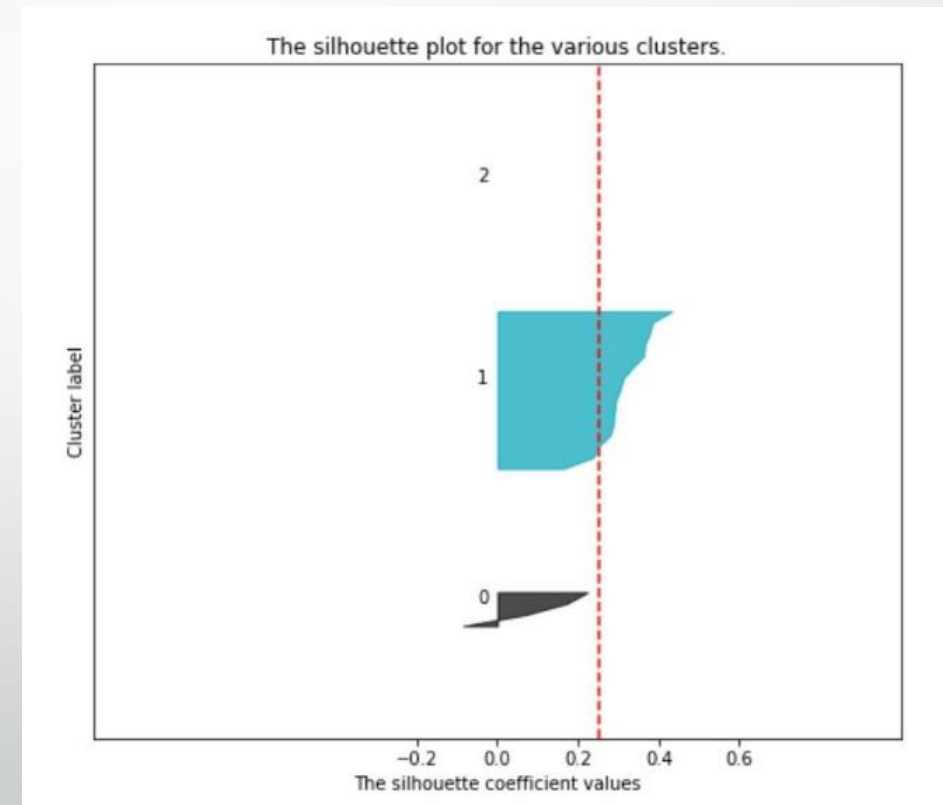
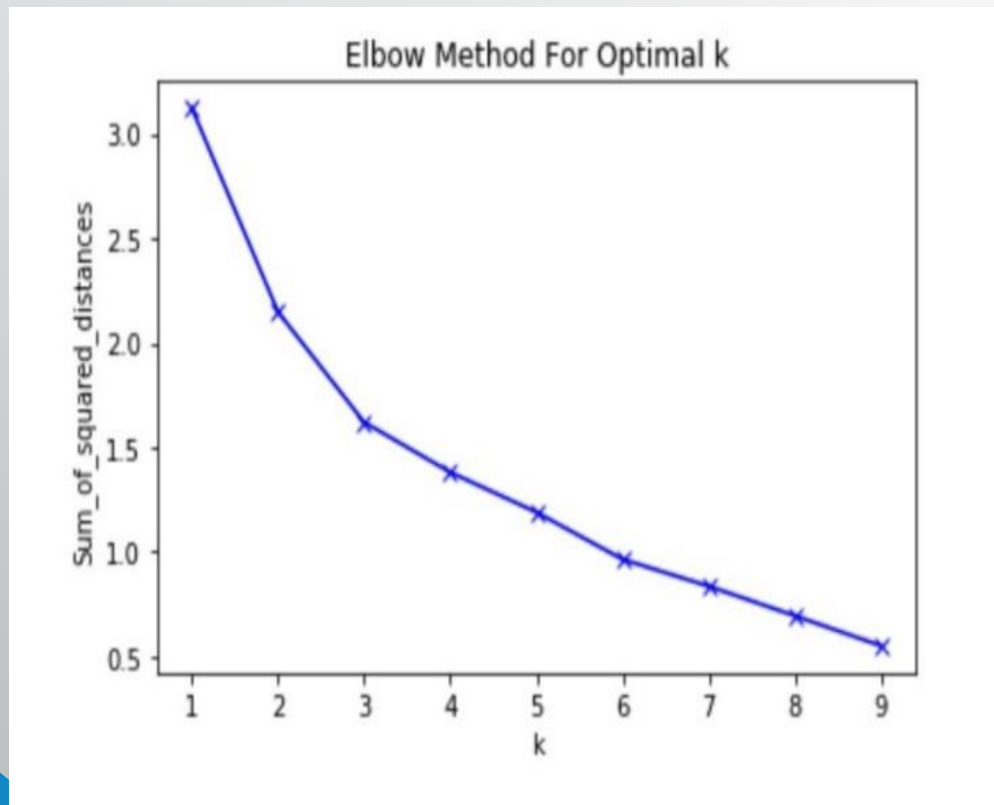
Silhouette score for 7 clusters = 0.27



# 7 Neighborhood clusters in Baltimore



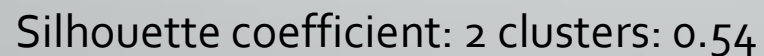
# Selecting K for Des Moines



Silhouette coefficient: 3 clusters: 0.25

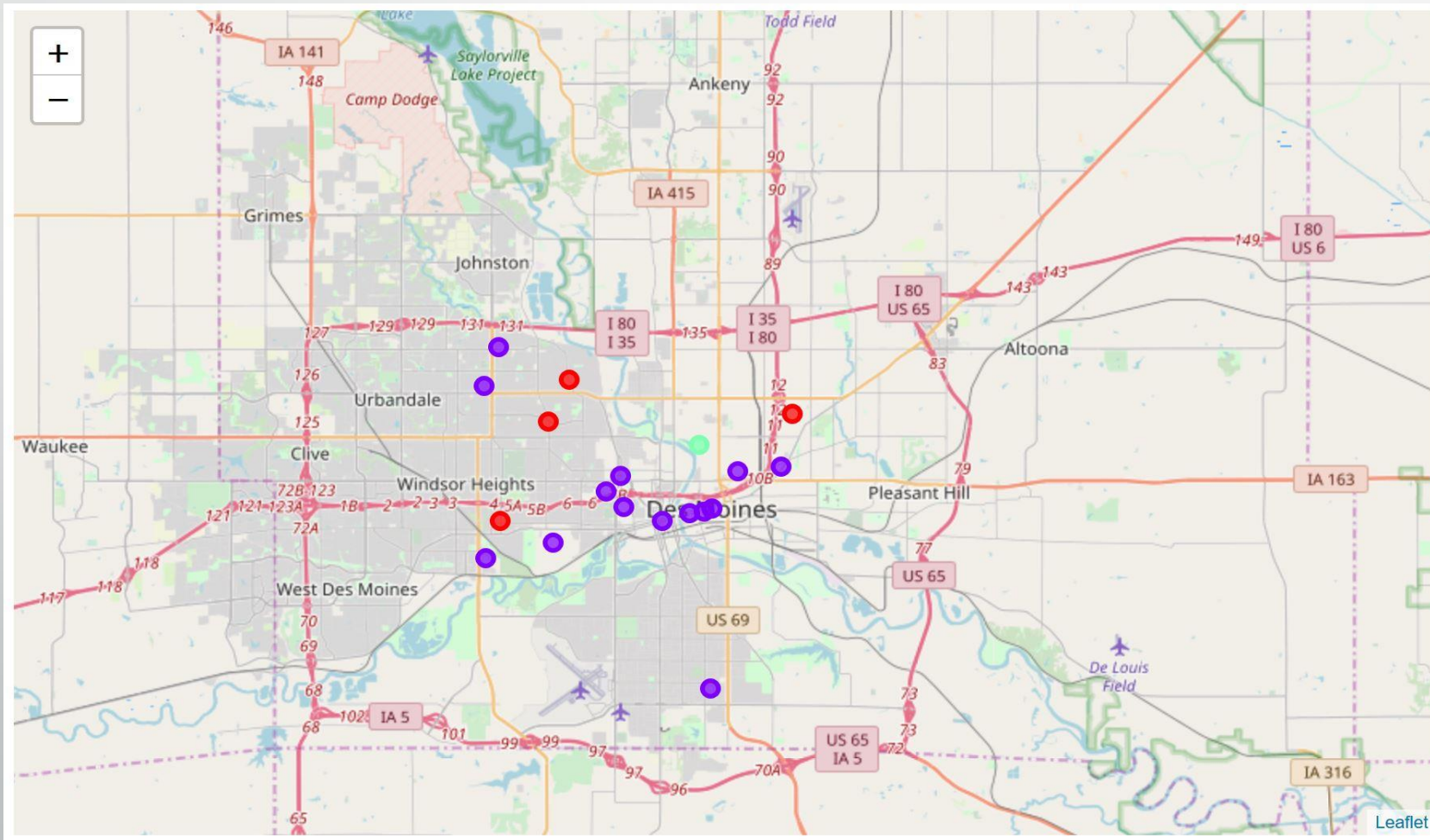


## Silhouette graph for 2 clusters

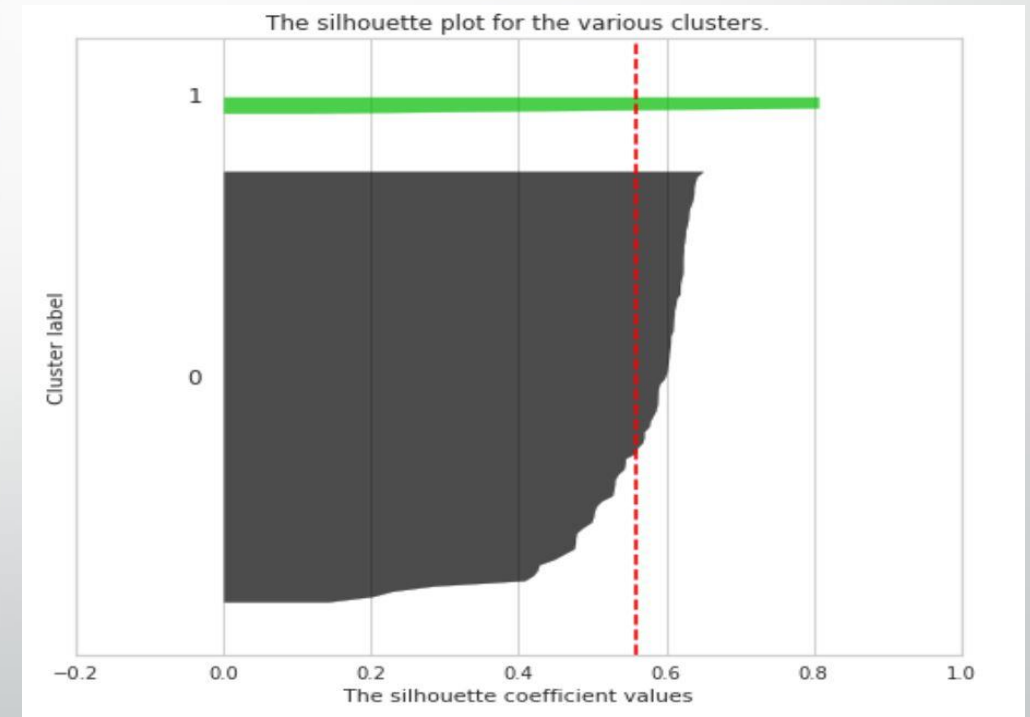
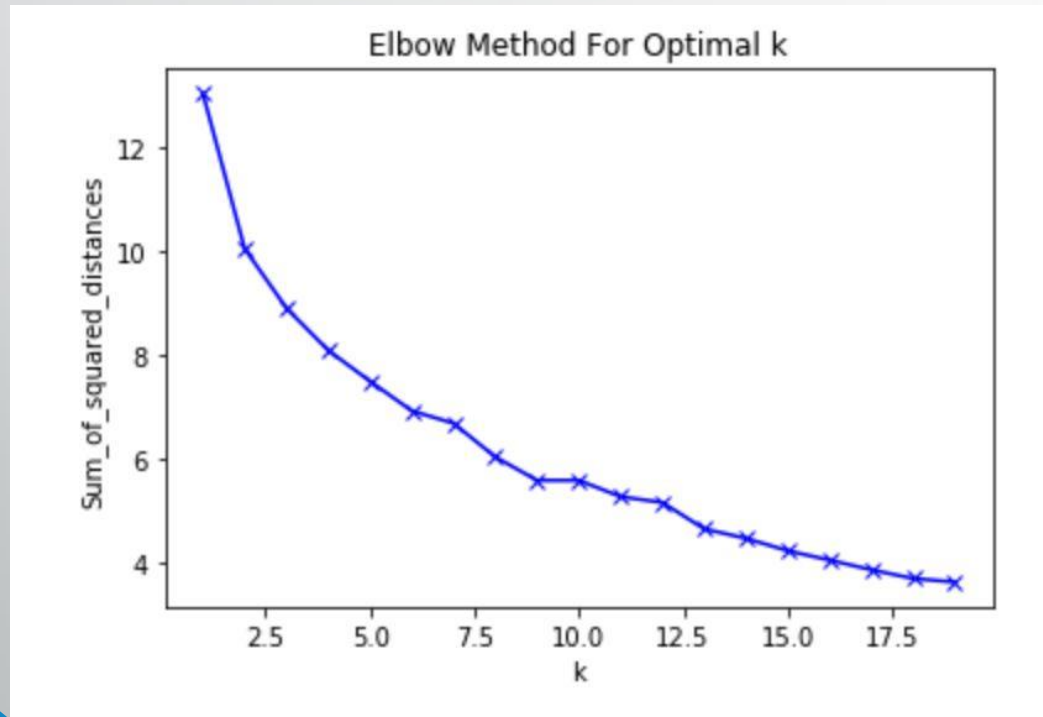


k	calinski harabaz score
2	8.4
3	7.95
4	7.15
5	6.52
6	6.7
7	6.6
8	6.08
9	6.65

## 2 Neighborhood clusters in Des Moines



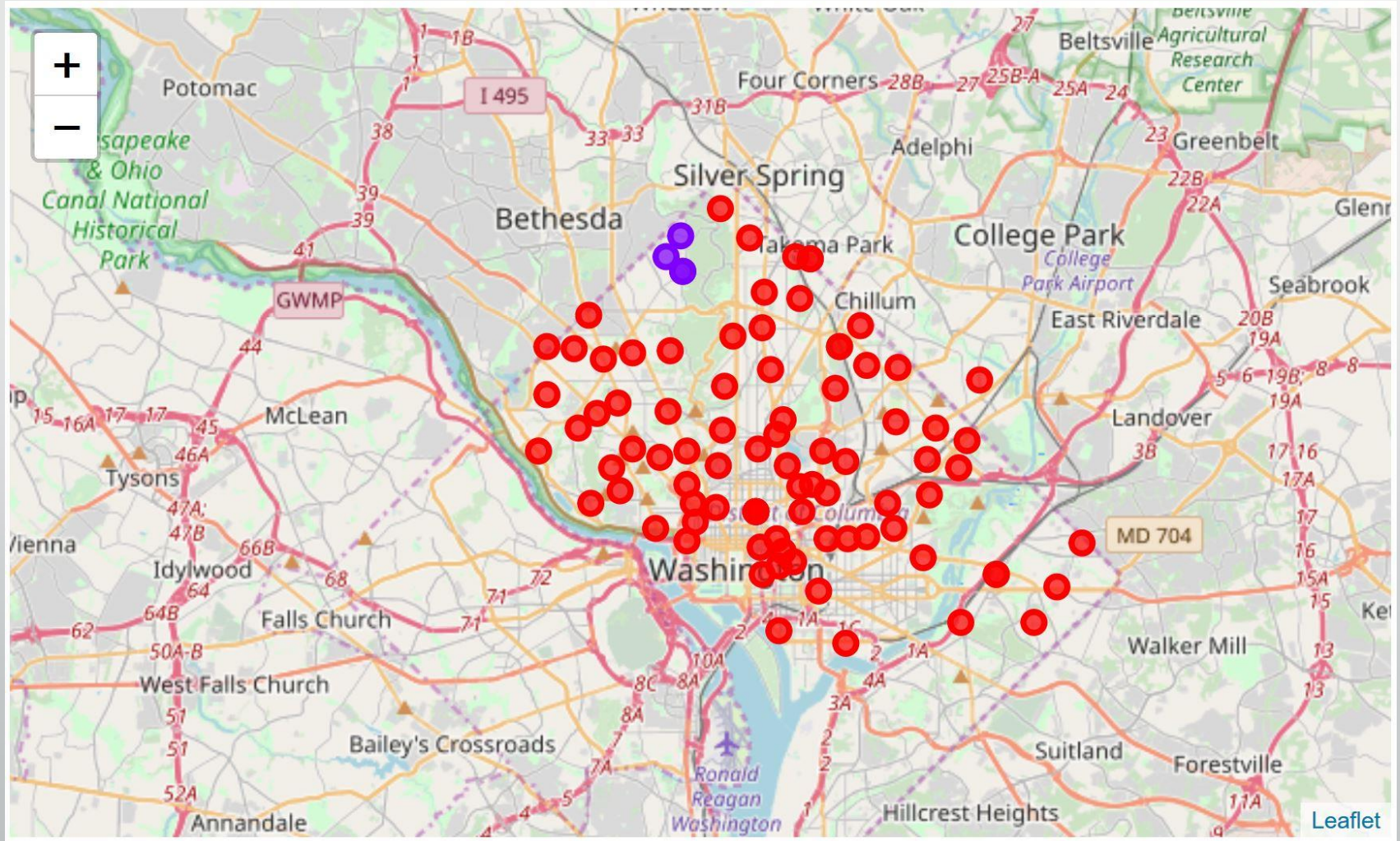
# Selecting K for Washington DC venue data



Silhouette score 2 clusters: 0.52



## 2 Neighborhood clusters in DC



# Cultural backgrounds represented in cities

- Washington DC
  - American
  - Asian
  - African
  - European
  - South American/Mexican
  - Mediterranean
  - Caribbean
  - Middle Eastern
- Baltimore
  - American
  - Asian
  - African
  - European
  - Mediterranean
  - Caribbean
  - Middle Eastern
  - Mexican/South American
- Des Moines
  - American
  - Asian
  - Mexican
  - European
  - Mediterranean
  - Middle Eastern



# Conclusions

- While some of the same cultural backgrounds are represented in the other cities, the sheer density in Washington DC emphasizes the differences in diversity.
- For the three cities explored, in descending order with the city with the highest cultural diversity
  - Washington DC
  - Baltimore, MD
  - Des Moines, IA