

Applied Data Science Capstone

Determining restaurant location in Atlanta, GA

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Overview

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- Conclusions and future work

Background

Opening a restaurant requires a knowledge of the optimal neighborhood and city surrounding it.

As a major business and travel hub, Atlanta, GA is an excellent location to consider opening a new restaurant.

In this project we use information about neighborhood venues to determine Atlanta neighborhoods that can support a contemporary casual restaurant.



Downtown Atlanta

Source: https://commons.wikimedia.org/wiki/File:Atlanta_Downtown_July_2010.JPG

Data

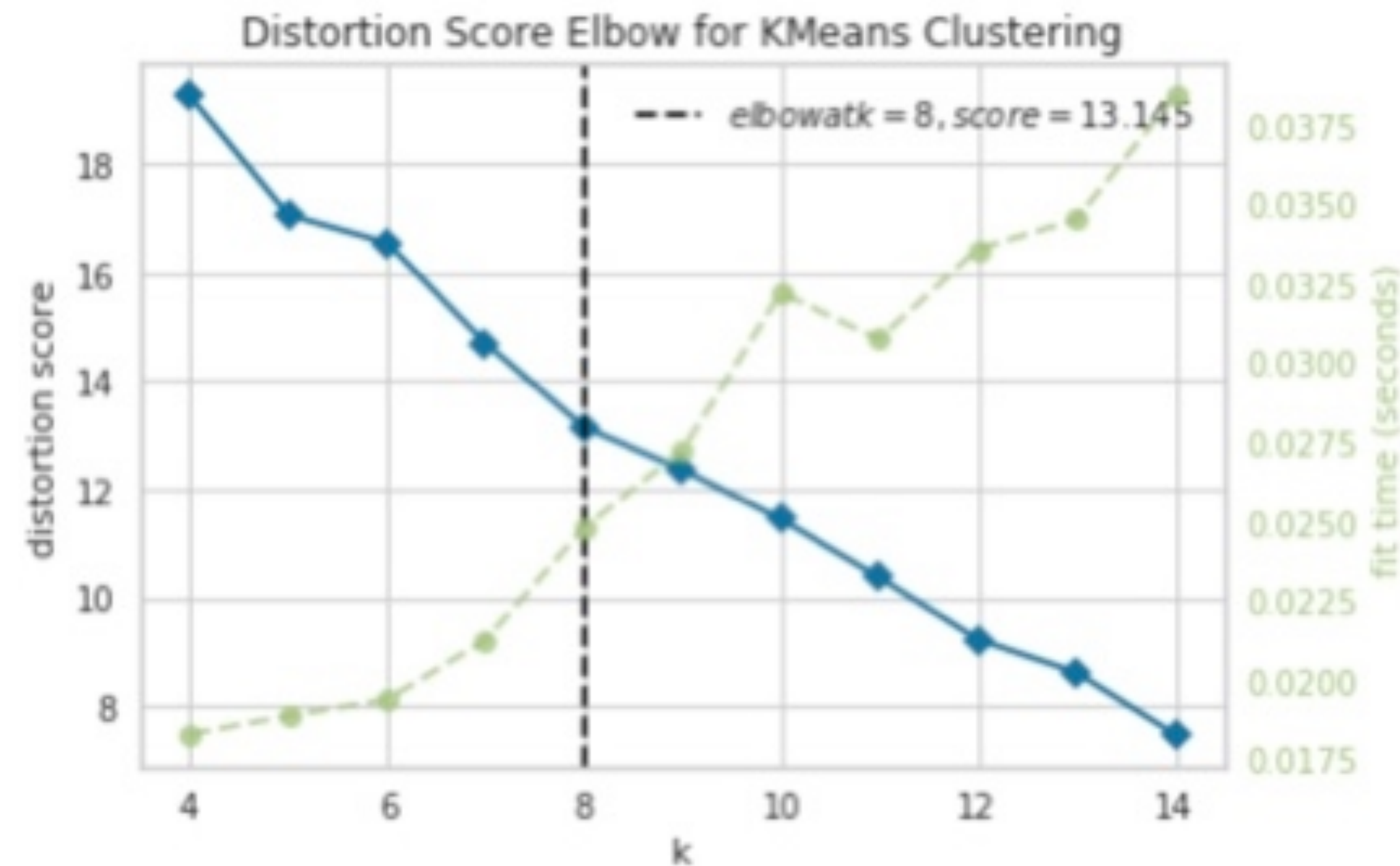
- Neighborhood data came from <https://hub.arcgis.com/datasets/GARC::city-of-atlanta-neighborhood-statistical-areas> and was downloadable as a .geojson file
- The data was given based on neighborhood statistical areas and instead of a single latitude/longitude for each neighborhood, boundary points were given.
- To effectively use this information and the Foursquare API to obtain venue information, these boundaries needed to be transformed into single data points. This was done by computing the centroid of each region to serve as the latitude/longitude.
- The Foursquare API was then used to find venues in each neighborhood.

Methodology

- Due to the wide variety of venues in the neighborhoods, it was difficult to identify neighborhoods that could support a restaurant using the full data set.
- To address this, venues were limited to types containing the words *restaurant*, *studio*, *museum*, and *art*.
- One hot encoding was used to convert the data into numeric form so that k -means clustering could be implemented.
- K -means clustering is an algorithm that groups together neighborhoods by common venues.

Methodology

- It is important to decide how many clusters to use when implementing k -means clustering. The elbow method was used to do this, implemented with the *yellowbrick* package.



Elbow method visualization

Results

- Each cluster was analyzed based on top venues. The two clusters that looked most promising were those indexed by 1 and 4.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
18	Bush Mountain, Oakland City	Vegetarian / Vegan Restaurant	Art Gallery	Yoga Studio	Chinese Restaurant	History Museum	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant
44	Peoplestown	Art Gallery	Yoga Studio	Dance Studio	Indian Restaurant	History Museum	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant
78	East Atlanta	Art Gallery	Yoga Studio	Dance Studio	Indian Restaurant	History Museum	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant
81	Collier Hills, Collier Hills North, Colonial H...	Art Gallery	Art Museum	Yoga Studio	Dance Studio	Indian Restaurant	History Museum	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant
96	Chosewood Park, Englewood Manor	Public Art	Art Gallery	Yoga Studio	History Museum	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant	Design Studio

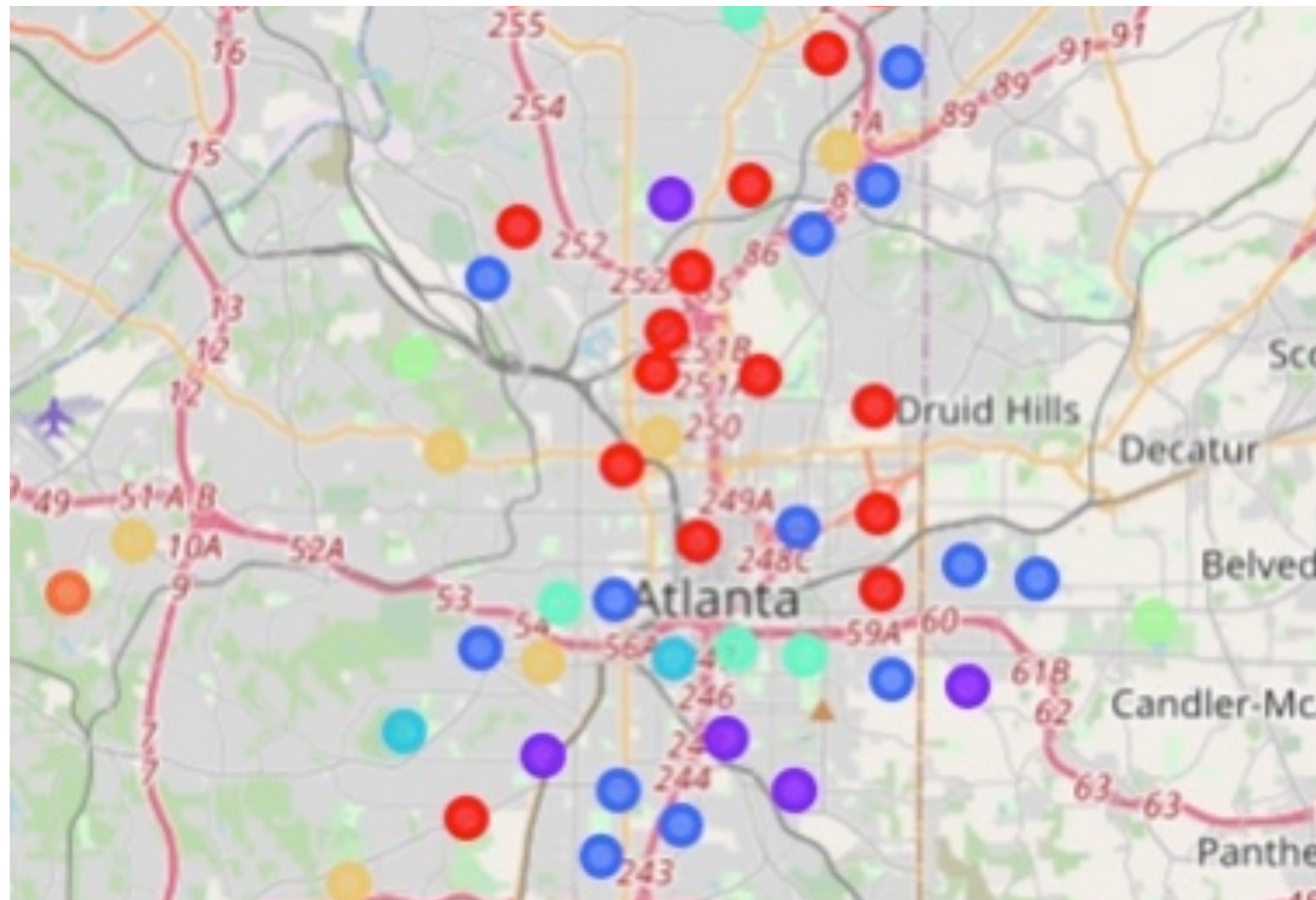
Cluster indexed by 1

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	Buckhead Forest, South Tuxedo Park	History Museum	Mexican Restaurant	Yoga Studio	Italian Restaurant	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant	Design Studio
21	Ashview Heights, Harris Chiles, Just Us	History Museum	Yoga Studio	Vietnamese Restaurant	Indian Restaurant	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant	Design Studio
45	Capitol Gateway, Summerhill	Restaurant	History Museum	Italian Restaurant	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant	Design Studio	Dance Studio
99	Grant Park, Oakland	History Museum	Yoga Studio	Vietnamese Restaurant	Indian Restaurant	Greek Restaurant	German Restaurant	Fast Food Restaurant	Falafel Restaurant	Ethiopian Restaurant	Design Studio

Cluster indexed by 4

Results

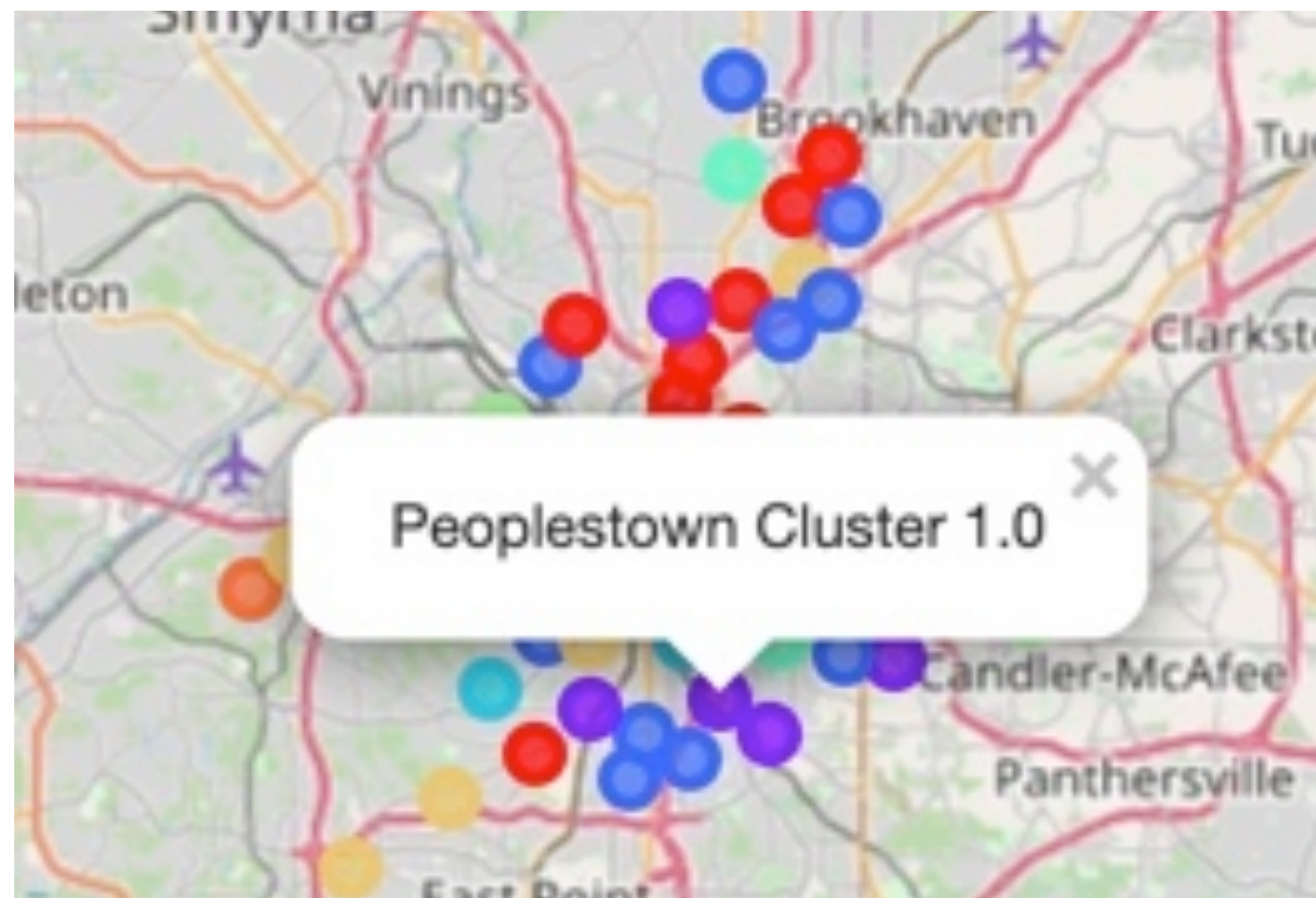
- The neighborhoods, color coded by cluster, were plotted on a map.



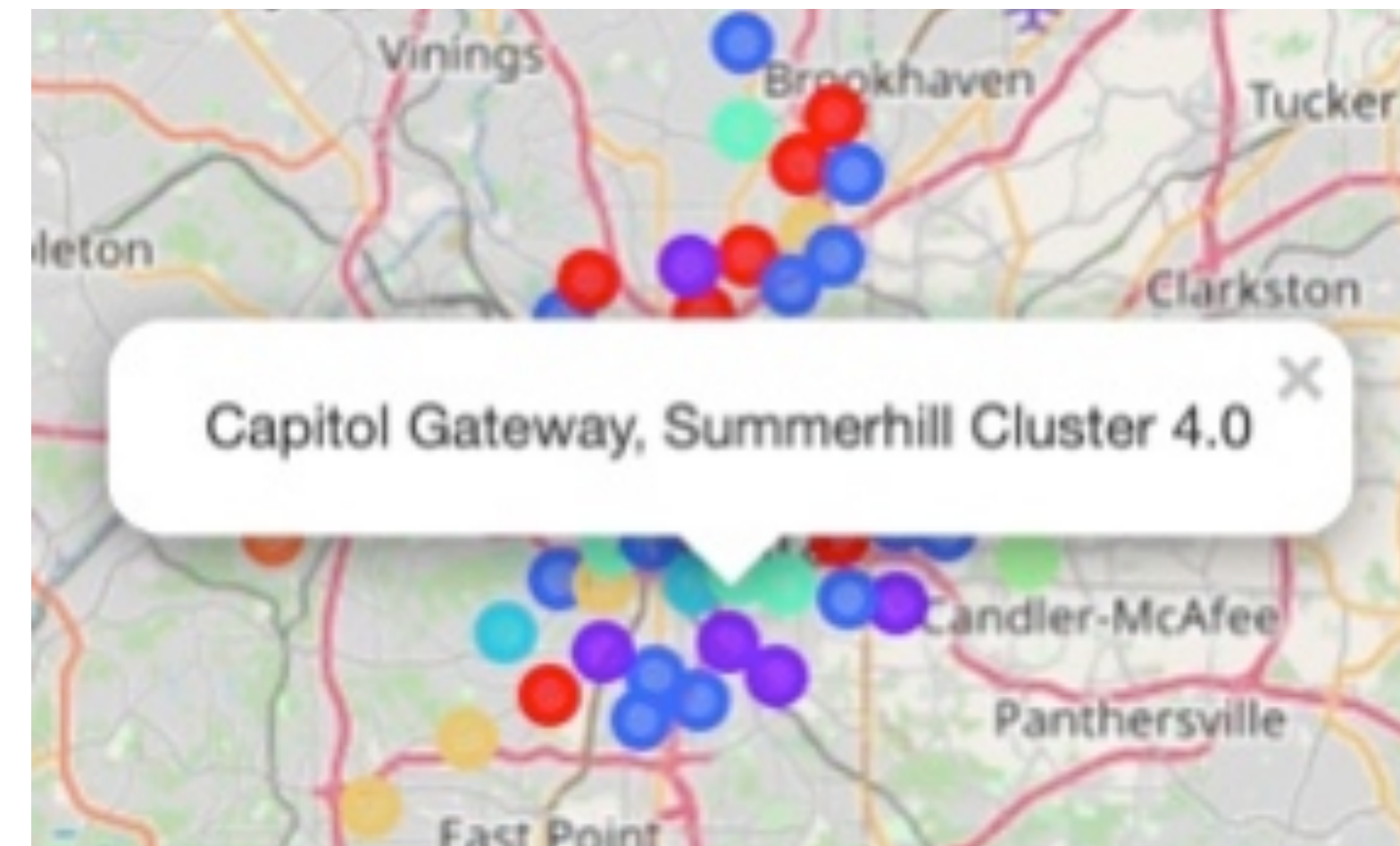
Clusters in Atlanta neighborhoods

Discussion

Using the map and the cluster analysis, it was determined that the Peoples Town and Capitol Gateway neighborhoods would be good options. The two neighborhoods are close to each other and in proximity to other Cluster 1 (purple) and 4 (teal) neighborhoods.



Peoples Town Neighborhood



Capitol Gateway Neighborhood