IBM Applied Data Science Capstone

Opening a Movie Theater in Denver, Colorado in 2021

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By Derek Plemons

Introduction

- Identifying possible locations for opening a new business is perhaps one of the most important factors for an investor to take into consideration.
- Finding such locations presents a challenge in regards to local competition and capital investment in opening a new business.
- Using current movie theater venue location data presents an opportunity to identify neighborhoods with little to no competition.
- Business Question:
  - For opening a new movie theater in Denver, CO, which neighborhoods present the greatest opportunity for investment?

Data

- List of neighborhoods in Denver, CO. Only the neighborhoods in Denver will be used in this study.
  - en.wikipedia.org/wiki/Category:Neighborhoods_in_Denver
- Neighborhood Latitude and Longitude coordinates of Denver neighborhoods. These are required to gather data on the different venues in Denver and to plot the neighborhoods on a map for analysis.
  - Geocoder python library
- Data on the venues in Denver pertaining to movie theaters. This data will be used to perform clustering analysis.
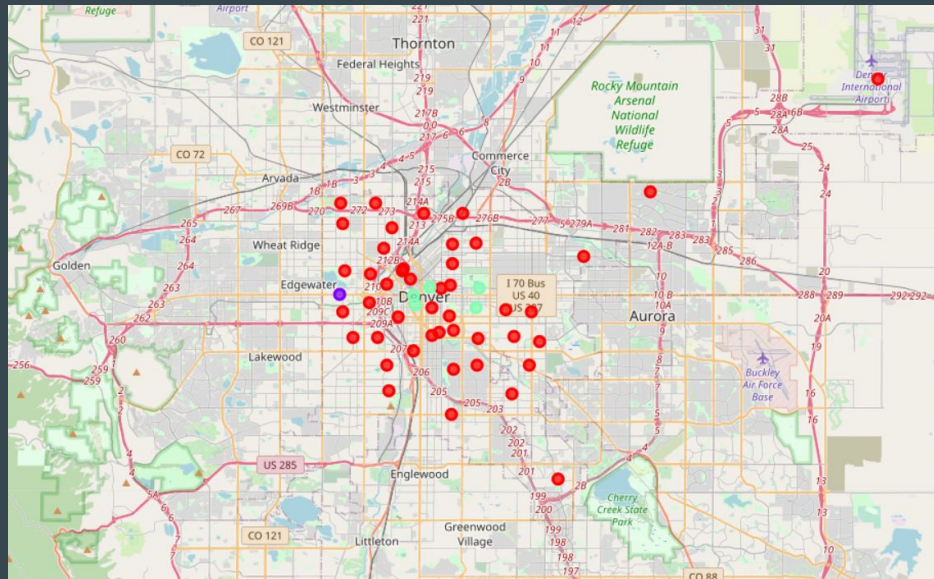 - Foursquare API: developer.foursquare.com/

Methodology

- Web Scrape wikipedia for list and locations of Denver neighborhoods
- Use Geocoder to convert locations to coordinates we can use with Foursquare
- Implement foursquare API to gather venue data
- Organize data by neighborhood and calculating the frequency of movie theaters occurence for all venues
- Select only movie theater venues
- Identify appropriate centroids to use for clustering
- Use K-means clustering to group movie theater venues
- Analyze k-means clustering results by projecting clusters onto map of Denver neighborhoods using Folium.

Results

The results we gathered from k-means clustering indicated that neighborhoods should be separated by 3 when filtering for movie theater venues

1. Cluster 0: Low concentration (Red)

2. Cluster 1: High concentration Purple)

3. Cluster 2: Moderate concentration (Green)

Discussion

- The highest concentration of movie theaters are located in Central Denver and on West Colfax.
- Cluster 1 and 2 present the highest concentration of clusters
- Cluster 0 presents the greatest opportunity for opening a new movie theater.
- Cluster 0 contains a high proportion of suburban areas which requires further investigation
- Zillow survey indicates Denver, CO is one of the Top 5 US real estate home markets.

Conclusion

- Open a new movie theater in a neighborhood represented by cluster 0
- Cluster 1 and 2 indicated moderate to high concentration of movie theaters and as such do not appear to be good opportunities for opening a new movie theater.
- The results of our investigation present opportunities for entrepreneurs and investors to identify neighborhoods with the least competition and the the greatest potential.