

IBM Applied Data Science Capstone

Opening A New Movie
Theater in Boston

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Business Problem

Goal: To analyze and choose the best neighborhood in Boston for a brand new movie theater.

Business Question

Where is the best location for a property developer to open a brand new movie theater in Boston, MA?





Data

Data Required

- List of all neighborhoods in Boston, MA
- Corresponding Latitudes and Longitudes
- Venue data

Data Sources

- The Culture Trip (Neighborhoods)
 - <https://theculturetrip.com/north-america/usa/massachusetts/articles/a-guide-to-bostons-23-neighborhoods/>
- Geocoder package (Latitude and Longitude)
- Foursquare API (Venue Data)

Methodology

- Web Scraping to get neighborhoods
- Geocoder for latitudes and longitudes
- Foursquare API to get venue data
- One Hot Encoding
- Pandas DataFrame for Movie Theater venues
- K-means Clustering
- Folium map to visualize the clusters



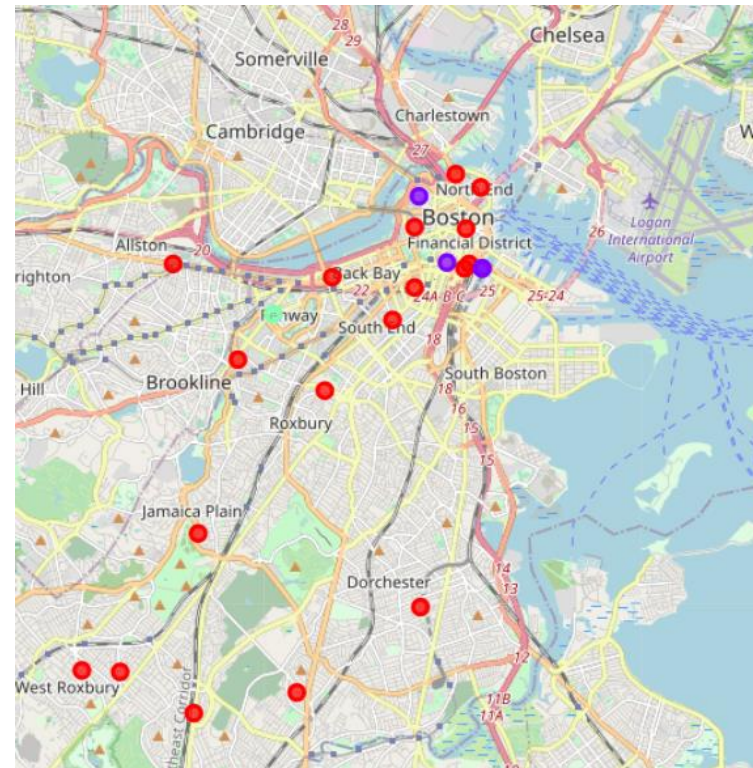
Results

K-means Clustering with 3 Clusters

Clusters

- **Cluster 0**: Neighborhoods with no movie theaters
- **Cluster 1**: Neighborhoods with one movie theater
- **Cluster 2**: Neighborhood with the highest concentration of movie theaters

Folium Map Showing Clusters



Results Continued

Cluster Zero

	Neighborhood	Movie Theater	Cluster Label	Latitude	Longitude
0	Allston	0.0	0	42.293046	-71.067169
20	South End	0.0	0	42.342560	-71.073580
19	South Boston	0.0	0	42.352250	-71.055691
18	Roxbury	0.0	0	42.330294	-71.089499
17	Roslindale	0.0	0	42.281813	-71.137111
16	North End	0.0	0	42.365490	-71.052970
15	Mission Hill	0.0	0	42.335780	-71.109810
13	Mattapan	0.0	0	42.278225	-71.096083
12	Jamaica Plain	0.0	0	42.305850	-71.119095
11	Hyde Park	0.0	0	42.274864	-71.119856
8	Downtown	0.0	0	42.358290	-71.056630
5	Charlestown	0.0	0	42.367770	-71.059017
4	Brighton	0.0	0	42.352131	-71.124924
3	Beacon Hill	0.0	0	42.358420	-71.068600
2	Bay Village	0.0	0	42.348168	-71.068471
1	Back Bay	0.0	0	42.349990	-71.087650
9	East Boston	0.0	0	42.351414	-71.056713
22	West Roxbury	0.0	0	42.282193	-71.145995

Cluster One

	Neighborhood	Movie Theater	Cluster Label	Latitude	Longitude
21	West End	0.01087	1	42.363940	-71.06739
7	Dorchester	0.01000	1	42.351349	-71.05285
14	Mid-Dorchester	0.01000	1	42.351349	-71.05285
6	Chinatown – Leather District	0.01000	1	42.352510	-71.06090

Cluster Two

	Neighborhood	Movie Theater	Cluster Label	Latitude	Longitude
10	Fenway-Kenmore	0.018868	2	42.34355	-71.10157

Discussion

- The Fenway-Kenmore neighborhood is the most concentrated movie theater location out of all the Boston neighborhoods, as well as the only neighborhood in Cluster 2.
- Cluster 0 contains 18 neighborhoods without a single movie theater.
- Cluster 1 contains 4 neighborhoods that all have one movie theater.



Recommendation



Open a new movie theater in Cluster 0



Any movie theater opening up in Allston, South End, South Boston, Roxbury, Roslindale, North End, Mission Hill, Mattapan, Jamaica Plain, Hyde Park, Downtown, Charlestown, Brighton, Beacon Hill, Bay Village, Back Bay, East Boston, or West Roxbury would face no competition.



Conclusion

Question: Where is the best location for a property developer to open a brand new movie theater in Boston, MA?

Answer: The new movie theater should be opened in a neighborhood located in cluster 0.

