

Evaluation of Boston Neighborhoods for New Pizza Store Locations

Capstone Project

Introduction

- Bob's Pizza has an established presence in the Mid-Atlantic U.S. States
- Plan to expand to the Northeast
- Boston chosen as first location for expansion
- Five stores to be located in Boston neighborhoods

Introduction

- Guidelines for choosing store locations based on past market research by Bob's Pizza
- Prefer locations with high concentration of fast food stores but low concentration of pizza stores
- Avoid locations with a high concentration of pizza stores
- Prefer locations with higher number of hotels

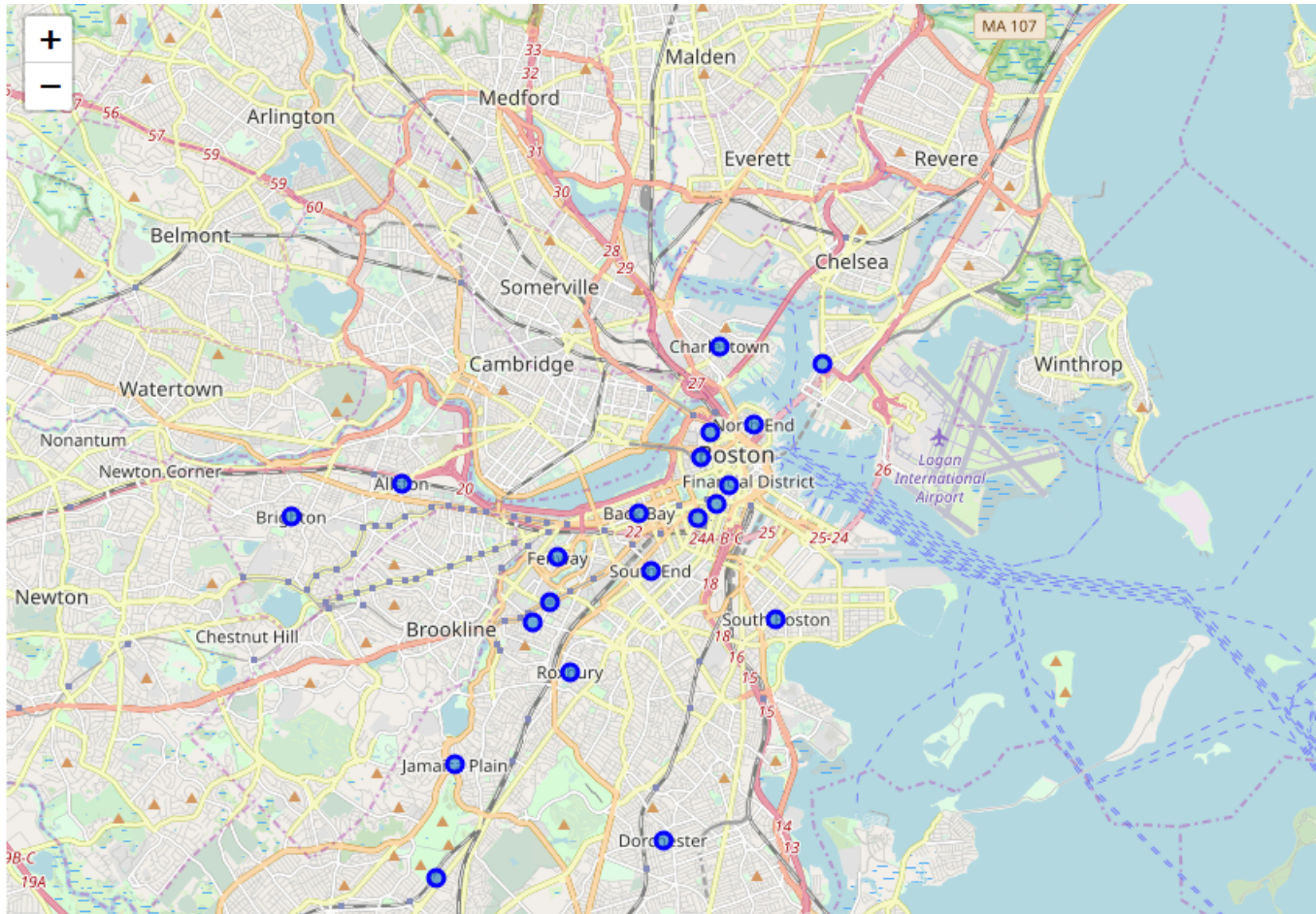
Description of Data

- Boston neighborhoods obtained from http://bostonopendata-boston.opendata.arcgis.com/datasets/3525b0ee6e6b427f9aab5d0a1d0a1a28_0.csv
- Coordinates for Boston neighborhoods determined from Geocoder API
- Boston neighborhood location based venues determined from FourSquare API

Data Cleaning and Processing

- Removed neighborhoods not known by Geocoder – Leather District, Harbor Islands
- Consolidated neighborhoods that are considered the same in Geocoder – removed South Boston Waterfront
- Removed unused data columns in Boston neighborhood data
- Obtained coordinates for each neighborhood

Boston Neighborhood Locations



Query FourSquare API

- Query FourSquare API to obtain venue data – one row per venue
- Perform one-hot encoding and grouping to obtain venue information per neighborhood
- Construct data set of top 10 venues per neighborhood

Boston Neighborhood Venues

	Name	Accessories Store	American Restaurant	Arepa Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	Automotive Shop	...	Tour Provider	Tourist Information Center	Tra
0	Allston	0.000000	0.000000	0.000000	0.012195	0.00	0.000000	0.024390	0.000000	0.012195	...	0.00	0.00	0.0
1	Back Bay	0.020000	0.050000	0.000000	0.010000	0.00	0.000000	0.000000	0.010000	0.000000	...	0.01	0.00	0.0
2	Bay Village	0.000000	0.032609	0.000000	0.000000	0.00	0.01087	0.021739	0.000000	0.000000	...	0.00	0.00	0.0
3	Beacon Hill	0.000000	0.028986	0.000000	0.000000	0.00	0.000000	0.000000	0.014493	0.000000	...	0.00	0.00	0.0
4	Brighton	0.000000	0.020000	0.000000	0.000000	0.00	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0
5	Charlestown	0.000000	0.000000	0.000000	0.000000	0.00	0.000000	0.000000	0.027027	0.000000	...	0.00	0.00	0.0
6	Chinatown	0.000000	0.020000	0.000000	0.000000	0.00	0.000000	0.080000	0.000000	0.000000	...	0.00	0.01	0.0
7	Dorchester	0.000000	0.000000	0.000000	0.000000	0.00	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0
8	Downtown	0.000000	0.040000	0.000000	0.000000	0.00	0.000000	0.020000	0.010000	0.000000	...	0.00	0.01	0.0
9	East Boston	0.000000	0.028571	0.000000	0.028571	0.00	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0
10	Fenway	0.000000	0.030000	0.000000	0.010000	0.00	0.01000	0.000000	0.010000	0.000000	...	0.01	0.00	0.0
11	Hyde Park	0.000000	0.142857	0.000000	0.000000	0.00	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0
12	Jamaica Plain	0.050000	0.050000	0.000000	0.100000	0.00	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0
13	Longwood	0.000000	0.000000	0.000000	0.040000	0.04	0.000000	0.000000	0.000000	0.000000	...	0.00	0.00	0.0

Top 10 Venues Data

	Neighbourhood	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
0	Allston	Korean Restaurant	Bakery	Pizza Place	Vegetarian / Vegan Restaurant	Chinese Restaurant	Thai Restaurant	Sandwich Place	Bubble Tea Shop	Pharmacy	Italian Restaurant
1	Back Bay	American Restaurant	Coffee Shop	Italian Restaurant	Seafood Restaurant	Clothing Store	Hotel	Cosmetics Shop	Spa	Sporting Goods Shop	Ice Cream Shop
2	Bay Village	Sandwich Place	Hotel	Italian Restaurant	Seafood Restaurant	Bakery	Theater	Steakhouse	Chinese Restaurant	Spa	Coffee Shop
3	Beacon Hill	Pizza Place	Italian Restaurant	Hotel Bar	Playground	Museum	Coffee Shop	French Restaurant	Plaza	Hotel	Sushi Restaurant
4	Brighton	Coffee Shop	Bakery	Pub	Chinese Restaurant	Bus Station	Bank	Pizza Place	Grocery Store	Dry Cleaner	Deli / Bodega
5	Charlestown	Pizza Place	Coffee Shop	Liquor Store	Gastropub	Pub	Convenience Store	Italian Restaurant	Mobile Phone Shop	Chinese Restaurant	Plaza
6	Chinatown	Chinese Restaurant	Asian Restaurant	Bakery	Coffee Shop	Sushi Restaurant	Theater	Pizza Place	Sandwich Place	Performing Arts Venue	Seafood Restaurant

Top 10 Venues Data

7	Dorchester	Market	Donut Shop	Caribbean Restaurant	Diner	Breakfast Spot	Nail Salon	Plaza	Café	Pizza Place	Vegetarian / Vegan Restaurant
8	Downtown	Coffee Shop	Sandwich Place	American Restaurant	Falafel Restaurant	New American Restaurant	Restaurant	Historic Site	Gym / Fitness Center	Chinese Restaurant	Hotel
9	East Boston	Latin American Restaurant	Mexican Restaurant	Convenience Store	Park	Pharmacy	Pizza Place	Sandwich Place	Donut Shop	Seafood Restaurant	Market
10	Fenway	Sports Bar	Pizza Place	Lounge	Coffee Shop	Thai Restaurant	Café	Baseball Field	Restaurant	American Restaurant	Furniture / Home Store
11	Hyde Park	American Restaurant	Pizza Place	Bar	Ice Cream Shop	Discount Store	Italian Restaurant	Platform	Theater	Pharmacy	Donut Shop
12	Jamaica Plain	Coffee Shop	Bakery	Art Gallery	Library	Liquor Store	Donut Shop	Deli / Bodega	Noodle House	Park	Pet Store
13	Longwood	Donut Shop	Sandwich Place	Italian Restaurant	Ice Cream Shop	Coffee Shop	Pub	Rental Car Location	Pizza Place	Sushi Restaurant	Liquor Store
14	Mattapan	Yoga Studio	Bakery	Convenience Store	Pharmacy	Caribbean Restaurant	Mobile Phone Shop	Shoe Store	Southern / Soul Food Restaurant	Food & Drink Shop	Fast Food Restaurant
15	Mission Hill	Pizza Place	Donut Shop	Sushi Restaurant	Café	Sandwich Place	Gastropub	Caribbean Restaurant	Italian Restaurant	Bar	Convenience Store
16	North End	Italian Restaurant	Pizza Place	Park	Bakery	Wine Shop	Seafood Restaurant	Café	Grocery Store	Market	Coffee Shop
17	Roslindale	Pizza Place	Rental Car Location	American Restaurant	Scenic Lookout	Donut Shop	Cycle Studio	Plaza	Pool	Big Box Store	Diner
18	Roxbury	Art Gallery	Gym	Plaza	Rental Car Location	Metro Station	Furniture / Home Store	Yoga Studio	Discount Store	Event Space	Electronics Store
19	South Boston	Pizza Place	Italian Restaurant	Bar	Coffee Shop	Sports Bar	Convenience Store	Park	Nightclub	Restaurant	Chinese Restaurant
20	South End	Italian Restaurant	Coffee Shop	Wine Shop	Wine Bar	Gift Shop	Park	Bakery	Bar	Mediterranean Restaurant	Jazz Club

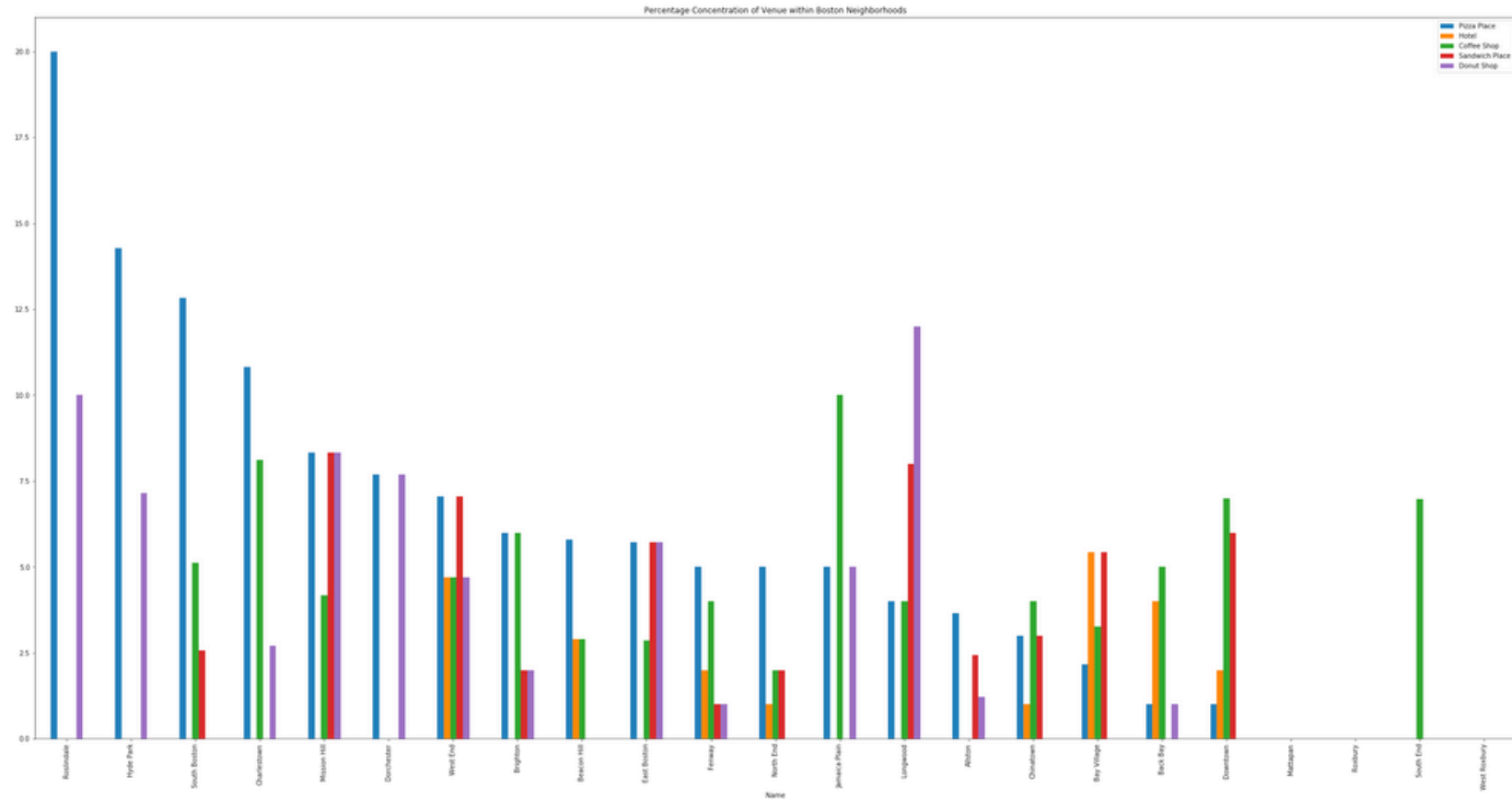
Top 10 Venues Data

21	West End	Pizza Place	Sandwich Place	Coffee Shop	Bar	Donut Shop	Hotel	Café	Italian Restaurant	Gym	Mexican Restaurant
22	West Roxbury	Health & Beauty Service	Yoga Studio	Discount Store	Farmers Market	Falafel Restaurant	Event Space	Electronics Store	Dumpling Restaurant	Dry Cleaner	Donut Shop

Process Data for Visualization

- Compare the venues that are relevant to the guidelines provided by the client
- Compare concentration of pizza stores, fast food stores (coffee shops, donut shops, sandwich places), and hotels.
- Employ a bar chart for visualization

Bar Chart Comparison



Results

Selected Boston neighborhood locations for new stores based on provided guidelines

- Back Bay
- Bay Village
- Downtown
- West End
- Longwood

Conclusion

- Boston is a thriving city with growing neighborhoods
- The data on existing businesses provides a good opportunity for analyzing future business prospects
- Additional market research will be needed to determine how the new store locations perform over time