

# Boston Neighborhood Analysis

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May 22, 2020

## I.I Introduction

This study will inspect and compare types of venues in different neighborhoods throughout Boston. It will result in venue data clustered by neighborhood. Graphs will display where a certain cuisine is most popular. The top venues in each neighborhood will also be considered and displayed.

## I.II. Problem

*How does a person decide where to live when they move to a new city?* For this project I will assume that types of venues indicate types of culture and that a neighborhood with a person's favorite type of venues will be the best place for them to live. To solve this problem, I will analyze and group venue data by neighborhood and present each neighborhood's top cuisine choices.

## I.III. Discussion

When someone decides to move to Boston, how will they know where to live? Most people who move to a new city attempt to live close to their job. Besides this requirement though, many who do not have a familiarity with the different boroughs and neighborhoods find themselves lost. After moving to a certain neighborhood, many people end up spending most of their time in a different neighborhood as it appeals to their interests and most importantly, it contains their favorite venues.

## II. Data Acquisition and Cleaning

Unfortunately, I could not find all the necessary data in one place. I had to create an excel file containing the different neighborhoods of Boston and their coordinates which I found on Google. These coordinates were linked to zip codes, however some neighborhoods had multiple zip codes and some zip codes contained multiple neighborhoods. In some cases, I had to estimate the coordinates for a given neighborhood. I estimated coordinates for these neighborhoods which, when mapped, were close enough for the sake of visualization and venue prevalence estimation. The first few rows of the cleaned data frame are shown below (Table 1):

Table 1. Boston Neighborhood Location Data Frame

	Latitude	Longitude
Neighborhood		
Chinatown/Leather District	42.3515	-71.0602
West End	42.3653	-71.0646
South End	42.3378	-71.0706
Roxbury	42.3218	-71.0884
Mission Hill	42.3319	-71.0988

Using this excel file, I input the coordinates for each neighborhood into Foursquare to attain different venues within 1000m from the center of each neighborhood. The first few rows can be seen below (Table 2). The purpose was to get venues that are close enough to be easily patronized by a person who lives in a certain neighborhood. The venue does not technically need to be in the neighborhood, as long as it is within 1000m, it is relevant. This distance of 1000m was chosen because it tended to be slightly larger than the smaller neighborhoods, but still allowed for larger neighborhoods to gather most of their relevant venues. A map of the Boston Neighborhoods and 1000m radius around each one is shown below (Map 1):

Map 1. Boston Neighborhoods with 1000m radii

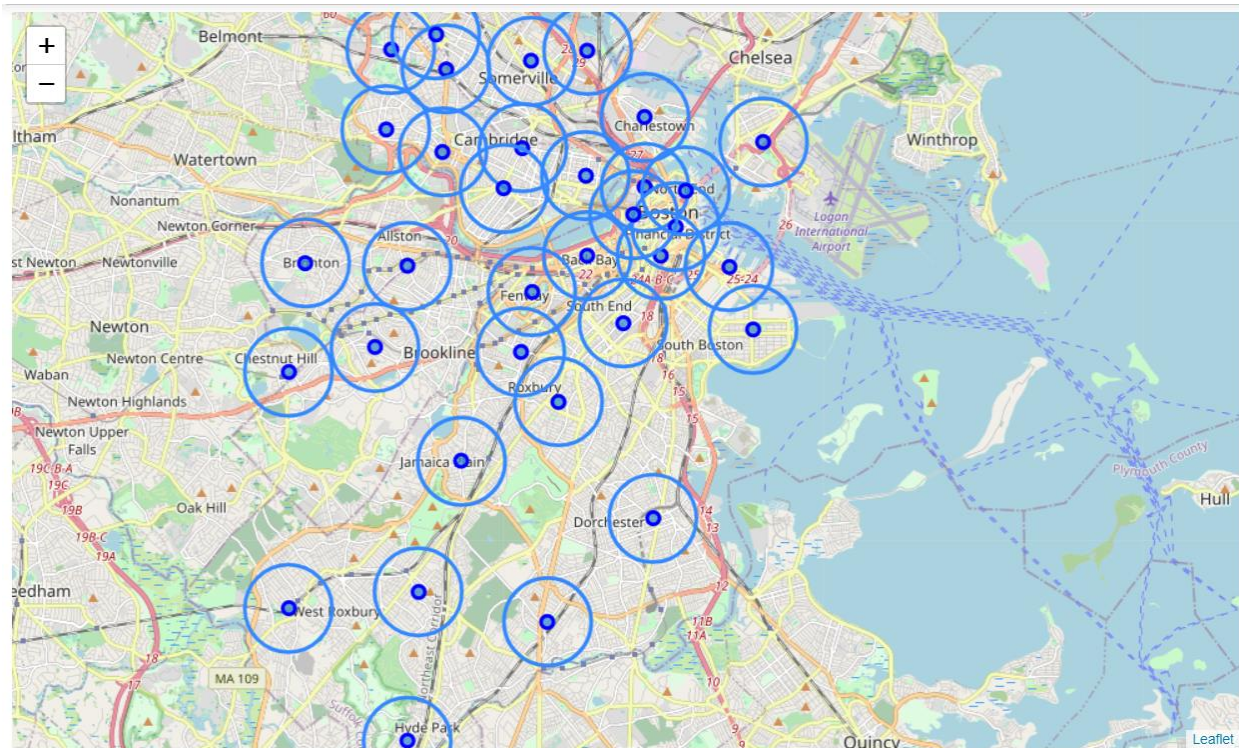


Table 2. Venues Organized by Neighborhood

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Chinatown/Leather District	42.3515	-71.0602	Gracernote Coffee	42.351657	-71.058204	Coffee Shop
1	Chinatown/Leather District	42.3515	-71.0602	Shabu Zen	42.350922	-71.060942	Asian Restaurant
2	Chinatown/Leather District	42.3515	-71.0602	Hostelling International Boston	42.351084	-71.063398	Hostel
3	Chinatown/Leather District	42.3515	-71.0602	Barry's Bootcamp	42.354010	-71.059776	Gym / Fitness Center
4	Chinatown/Leather District	42.3515	-71.0602	Tatte Bakery & Cafe	42.353111	-71.057117	Bakery

The Foursquare Data combined with the Neighborhood Data offers insight into the venue options in each neighborhood. Using this information in combination with an individual's venue preferences, I can determine the best place for an individual to live using a model.

### III. Exploratory Data Analysis

The first data exploring phase required learning about venue types. I downloaded an excel file with all of the venue types and how many of each type were found. I did the same for number of venues per neighborhood to gain more insight into the general amount of opportunity available in each neighborhood. Both of these excel files can be viewed in the Appendix (Table A and Table B respectively). The most popular venues through out Boston are Pizza Place, Park, Coffee Shop, and Italian Restaurant occurring 96, 88, 86, and 80 times respectively. Foursquare capped my venues per neighborhood at 100 and many neighborhoods hit this threshold. North Cambridge, Roxbury, and West Cambridge had the least amount of venues with 27, 27, and 26 respectively while neighborhoods close to and including Downtown all hit the 100 venue threshold.

Venues in each neighborhood were organized by type. One hot encoding was performed and the top venues for each neighborhood were placed in a table. A sample is below (Table 3):

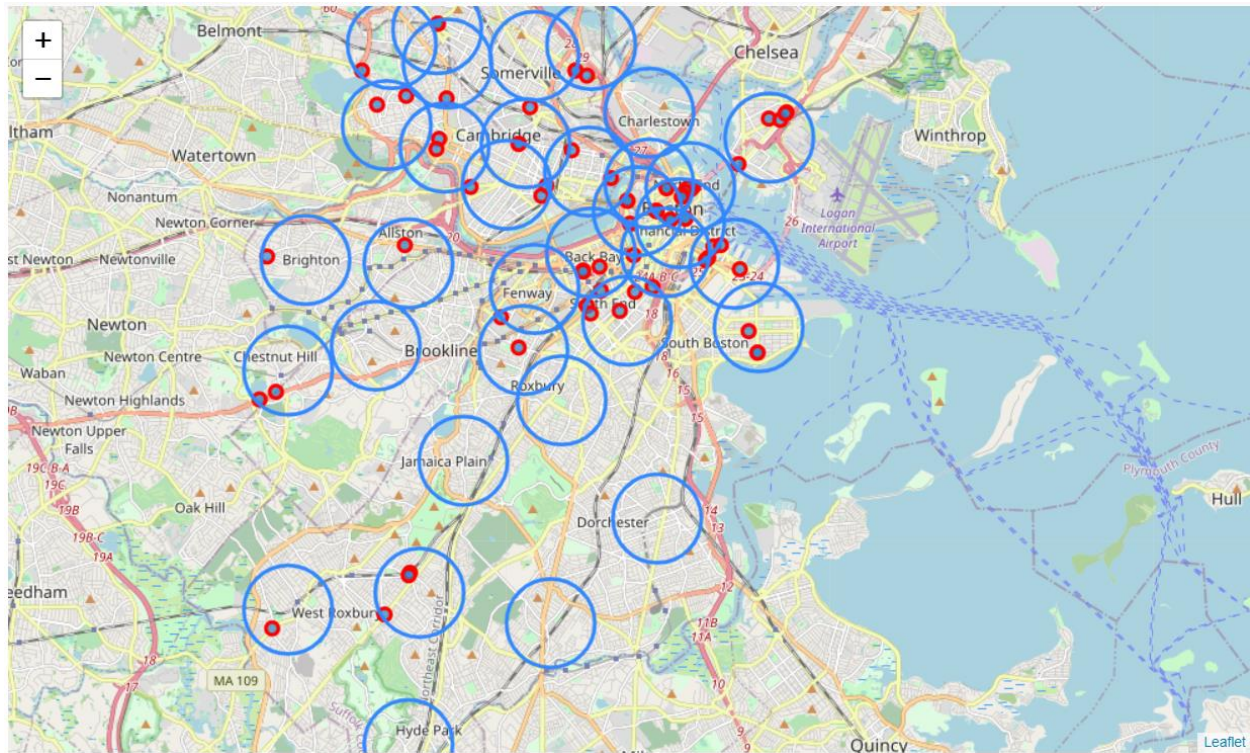
Table 3. Sample of Common Venues per Neighborhood

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Allston	Korean Restaurant	Thai Restaurant	Chinese Restaurant	Mexican Restaurant	Pizza Place
1	Assembly Square	Clothing Store	Donut Shop	Mexican Restaurant	Coffee Shop	American Restaurant
2	Back Bay	Clothing Store	Seafood Restaurant	Spa	Park	Italian Restaurant
3	Beacon Hill	Coffee Shop	Italian Restaurant	Hotel	Historic Site	French Restaurant
4	Brighton	Pizza Place	Chinese Restaurant	Bakery	Grocery Store	Sushi Restaurant
5	Brookline Village	Park	Coffee Shop	Mexican Restaurant	Hotel	Pizza Place

I also put together a map of all Italian Restaurants in Boston with neighborhood radii shown (Map 2). As you will see in the Predictive Modeling section, I perform an example analysis where Italian Restaurant is the top venue category criteria. Most of the Italian Restaurants are near Downtown or the North End (the well-known Italian Neighborhood in Boston). A map of all Italian Restaurants in Boston is shown on the next page:



Map 2. Italian Restaurants in Boston with Neighborhood Radii



These visualizations give some insight into the differences between neighborhoods in Boston. More analysis is required (and detailed in the next section) to gain actionable and clear results showing the best neighborhoods for a person given their venue category criterion.

#### IV. Predictive Modeling

Ultimately, I simplified this study to accept the following user inputs: five most important venues to have in the neighborhood including one “top priority” venue. Hopefully, a neighborhood exists that will have at least one instance of each of these five venues and many instances of the “top priority” venue. In order to determine if a neighborhood satisfies the “top priority” venue portion, I will check where the venue is ranked in each neighborhood. If it falls in the top 3 the requirement is satisfied (score = 1), top 5 (score = .8), top 10 (score = .6), top 20 (score = .4), outside of the top 20 (score = 0). Combining these scores with the proportion of the five venues found in the neighborhood and dividing this number by 2 will give a neighborhood ranking between 0-1. Functions were created to score each neighborhood. These rankings will make it easier to visualize how suited each neighborhood is to a person’s lifestyle.

I asked a friend to give me his top 5 venues which were 'Italian', 'Pizza', 'Ice Cream', 'Gym', and 'Coffee' with his top choice being 'Italian'. Venue Types that match his criteria are 'Italian Restaurant', 'Pizza Place', 'Ice Cream Shop', 'Gym', 'Gym / Fitness Center', 'Coffee Shop'. Back Bay and Assembly Square both had all 5 venue types in their top 20, but neither had 'Italian Restaurant' in their top 3 (Table 4). A split table can be seen below:

Table 4. Neighborhoods with All 5 Venue Category Matches

	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	11th Most Common Venue	
2	Back Bay	Clothing Store	Seafood Restaurant	Spa	Park	Italian Restaurant	Coffee Shop	Gym	Bakery	Wine Shop	New American Restaurant	Mediterranean Restaurant	
1	Assembly Square	Clothing Store	Donut Shop	Mexican Restaurant	Coffee Shop	American Restaurant	Restaurant	Sporting Goods Shop	Video Store	Ice Cream Shop	Pizza Place	Park	
	12th Most Common Venue	13th Most Common Venue	14th Most Common Venue	15th Most Common Venue	16th Most Common Venue	17th Most Common Venue	18th Most Common Venue	19th Most Common Venue	20th Most Common Venue	Main Score	Number of Matches	Match Score	Total Score
Shopping Mall	Plaza	Salad Place	Steakhouse	Ice Cream Shop	Hotel	Sushi Restaurant	Gym / Fitness Center	Jewelry Store	0.750000	5	1.000000	0.875000	
Bar	Steakhouse	Brazilian Restaurant	Gym	Café	Sandwich Place	Seafood Restaurant	Italian Restaurant	Furniture / Home Store	0.200000	5	1.000000	0.600000	

However, the South End actually scored better than these neighborhoods because it has the top criterion 'Italian Restaurant' as its most prevalent venue category. A split table of the top scored neighborhoods for this criterion can be seen on the next page (Table 5) (all neighborhoods were scored and can be seen in the Appendix, Table C):

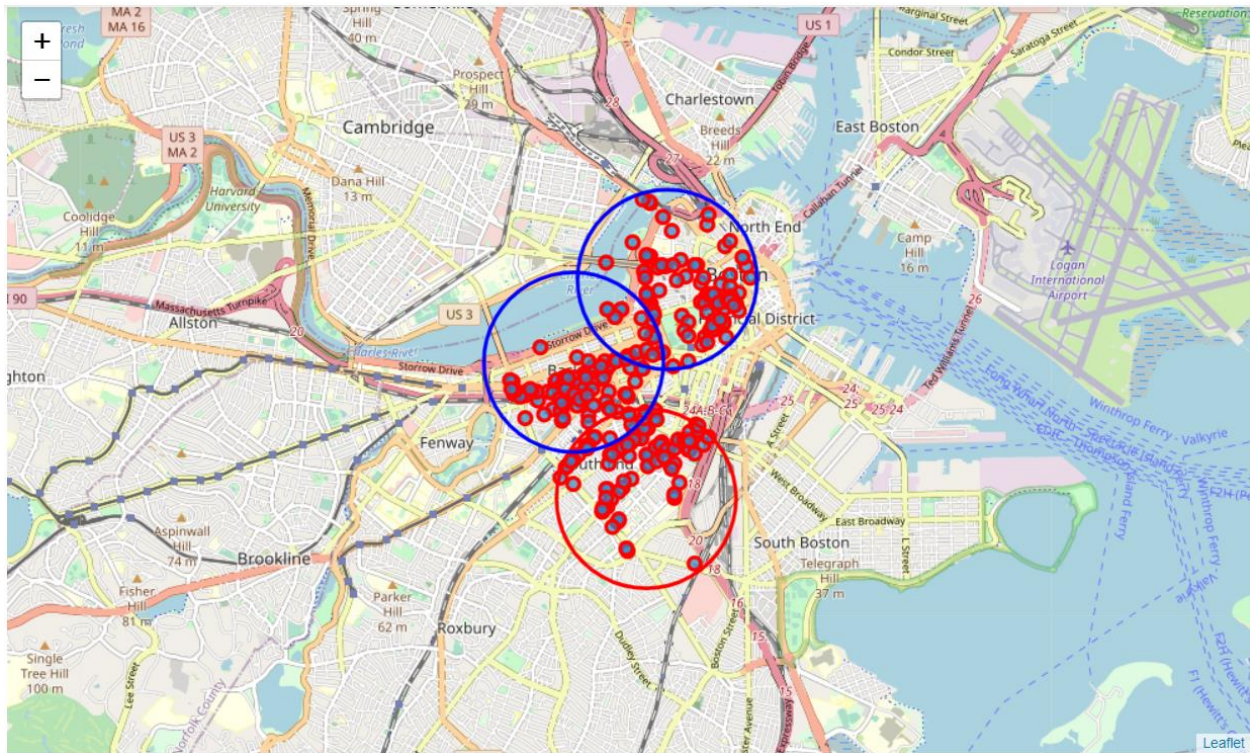
Table 5. Top Neighborhoods Scored with Top Venues Matched

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	11th Most Common Venue	
South End	Italian Restaurant	American Restaurant	Wine Bar	French Restaurant	Wine Shop	Pet Store	Mexican Restaurant	Café	Gym / Fitness Center	Coffee Shop	Thai Restaurant	
Back Bay	Clothing Store	Seafood Restaurant	Spa	Park	Italian Restaurant	Coffee Shop	Gym	Bakery	Wine Shop	New American Restaurant	Mediterranean Restaurant	
Beacon Hill	Coffee Shop	Italian Restaurant	Hotel	Historic Site	French Restaurant	Pizza Place	Seafood Restaurant	Park	Steakhouse	American Restaurant	Boat or Ferry	
North End	Italian Restaurant	Park	Seafood Restaurant	Pizza Place	Hotel	Bakery	Coffee Shop	Historic Site	Sandwich Place	Yoga Studio	Aquarium	
South Boston	Coffee Shop	Pizza Place	Park	Convenience Store	Italian Restaurant	Diner	Beach	New American Restaurant	Furniture / Home Store	Breakfast Spot	Bar	
12th Most Common Venue	13th Most Common Venue	14th Most Common Venue	15th Most Common Venue	16th Most Common Venue	17th Most Common Venue	18th Most Common Venue	19th Most Common Venue	20th Most Common Venue	Main Score	Number of Matches	Match Score	Total Score
Park	Bakery	Japanese Restaurant	Gastropub	Mediterranean Restaurant	Pizza Place	Asian Restaurant	Bar	Gift Shop	1.000000	4	0.800000	0.900000
Shopping Mall	Plaza	Salad Place	Steakhouse	Ice Cream Shop	Hotel	Sushi Restaurant	Gym / Fitness Center	Jewelry Store	0.750000	5	1.000000	0.875000
Theater	Hotel Bar	Scenic Lookout	Bakery	Bar	Gym / Fitness Center	Market	Restaurant	Gourmet Shop	0.900000	4	0.800000	0.850000
Beer Garden	Boat or Ferry	American Restaurant	Greek Restaurant	Gastropub	Church	Boutique	Ski Chalet	Skating Rink	1.000000	3	0.600000	0.800000
Pub	Donut Shop	Dive Bar	Sports Bar	American Restaurant	Restaurant	Bowling Alley	IT Services	Ice Cream Shop	0.750000	4	0.800000	0.775000

I put together a map to visualize these neighborhoods with all the venues shown below (Map 3). The venues inside the red circle are within range of the top venue (South End). Check out the notebook for a more interactive version of the map. Neighborhood names appear when you click on the circles and venues are labelled as well.



Map 3. Best Neighborhoods with All Venues



It is interesting to note that these neighborhoods are all close enough to have overlapping venues. This makes sense especially if key venues (such as Italian Restaurants) appear at the overlaps but that is out of the scope of this project. I did run this model a few times with different criteria and found that, more often than not, top neighborhoods were clustered close to each other. This could indicate that neighborhoods influence the cultures and venues of nearby neighborhoods. This is an interesting potential insight while out of the scope of this project, it could influence future projects that focus on neighborhood interactions and correlations.

## V. Conclusion

It is often difficult to determine the best neighborhood to live in when moving to a new city on your own. Venue data when organized by neighborhood, grants insights which can be helpful when making such a decision. Initial visualizations give more insight into neighborhood trends, but a more refined model is required to gain actionable insights into which neighborhood a person should move to. A person's venue interests can be prioritized and compared to the venues available in each neighborhood in order to make a data driven decision. In this example, with this person's criteria, this person should look at moving to the South End. If they have other requirements such as distance to work that might affect their decision, they could look at the other top neighborhoods recommended to them such as the Back Bay and Beacon Hill. Regardless, this model helps a person to focus their apartment search on a few neighborhoods and prevents them from getting overwhelmed by the plethora of options.

## VI. Appendix

Table A. Venues per Category

Venue Category	Count
Pizza Place	96
Park	88
Coffee Shop	86
Italian Restaurant	80
Bakery	68
American Restaurant	62
Café	59
Seafood Restaurant	50
Mexican Restaurant	48
Sandwich Place	48
Hotel	47
Donut Shop	46
Bar	39
Ice Cream Shop	38
Grocery Store	37
Gym	36
Chinese Restaurant	33
Liquor Store	29
New American Restaurant	29
Sushi Restaurant	28
Gym / Fitness Center	27
Gastropub	25
Pub	25
Yoga Studio	25
Clothing Store	24
Pharmacy	23
Convenience Store	22
Greek Restaurant	22
Thai Restaurant	22
Bookstore	21
Historic Site	21
Restaurant	21
Japanese Restaurant	20
French Restaurant	19
Plaza	19
Burger Joint	18
Deli / Bodega	18
Mediterranean Restaurant	18
Spa	18

Steakhouse	18
Vegetarian / Vegan Restaurant	17
Asian Restaurant	16
Gourmet Shop	16
Indian Restaurant	16
Tea Room	16
Breakfast Spot	15
Vietnamese Restaurant	15
Art Gallery	14
Art Museum	14
Bank	14
Salad Place	14
Wine Shop	14
Diner	13
Gift Shop	13
Theater	13
Trail	13
Baseball Field	12
Brewery	12
Furniture / Home Store	12
Lounge	12
Market	12
Rental Car Location	12
Burrito Place	11
Cycle Studio	11
History Museum	11
Music Venue	11
Pet Store	11
Salon / Barbershop	11
Wine Bar	11
Farmers Market	10
Science Museum	10
BBQ Joint	9
Cocktail Bar	9
Fried Chicken Joint	9
Middle Eastern Restaurant	9
Scenic Lookout	9
Skating Rink	9
Athletics & Sports	8
Dive Bar	8
Falafel Restaurant	8

Garden	8
Korean Restaurant	8
Latin American Restaurant	8
Ramen Restaurant	8
Boat or Ferry	7
Boutique	7
Comedy Club	7
Cosmetics Shop	7
Department Store	7
Discount Store	7
Hotel Bar	7
Jewelry Store	7
Juice Bar	7
Playground	7
Record Shop	7
Rock Club	7
Sporting Goods Shop	7
Beer Garden	6
Brazilian Restaurant	6
Caribbean Restaurant	6
Dessert Shop	6
Harbor / Marina	6
Metro Station	6
Shopping Mall	6
Sports Bar	6
Taco Place	6
Bubble Tea Shop	5
Comfort Food Restaurant	5
Dog Run	5
Food & Drink Shop	5
Food Truck	5
Library	5
Movie Theater	5
Outdoor Sculpture	5
Southern / Soul Food Restaurant	5
Thrift / Vintage Store	5
Toy / Game Store	5
Video Store	5
Aquarium	4
Belgian Restaurant	4
Boxing Gym	4
Circus	4

Ethiopian Restaurant	4
Fast Food Restaurant	4
Fish Market	4
Food Court	4
Gas Station	4
Hobby Shop	4
Hockey Arena	4
Indie Movie Theater	4
Lake	4
Massage Studio	4
Miscellaneous Shop	4
Mobile Phone Shop	4
Museum	4
Nightclub	4
Portuguese Restaurant	4
Ski Chalet	4
Smoke Shop	4
Tapas Restaurant	4
Accessories Store	3
Arts & Crafts Store	3
Bagel Shop	3
Beach	3
Big Box Store	3
Bistro	3
Chocolate Shop	3
Comic Shop	3
Concert Hall	3
Creperie	3
Cuban Restaurant	3
Dumpling Restaurant	3
Electronics Store	3
Event Space	3
Flower Shop	3
Frozen Yogurt Shop	3
General Entertainment	3
Hardware Store	3
Hotpot Restaurant	3
Irish Pub	3
Kids Store	3
Lingerie Store	3
Men's Store	3
Nail Salon	3
Neighborhood	3



Noodle House	3
Opera House	3
Organic Grocery	3
Pastry Shop	3
Performing Arts Venue	3
Peruvian Restaurant	3
Poke Place	3
Pool	3
Shipping Store	3
Speakeasy	3
Tennis Court	3
Track	3
Train Station	3
Whisky Bar	3
ATM	2
African Restaurant	2
Airport	2
Airport Terminal	2
Antique Shop	2
Arepa Restaurant	2
Baby Store	2
Beer Store	2
Bowling Alley	2
Bus Station	2
Bus Stop	2
Business Service	2
Cajun / Creole Restaurant	2
Cheese Shop	2
Church	2
Cupcake Shop	2
Dance Studio	2
Doctor's Office	2
Food	2
Home Service	2
Hot Dog Joint	2
IT Services	2
Knitting Store	2
Laundromat	2
National Park	2
Optical Shop	2
Other Repair Shop	2
Pet Service	2
Planetarium	2

Platform	2
River	2
Soba Restaurant	2
Social Club	2
South American Restaurant	2
Sri Lankan Restaurant	2
Storage Facility	2
Supermarket	2
Taiwanese Restaurant	2
Tibetan Restaurant	2
Tour Provider	2
Turkish Restaurant	2
Wings Joint	2
Women's Store	2
Afghan Restaurant	1
Airport Service	1
Arcade	1
Auditorium	1
Auto Garage	1
Automotive Shop	1
Baseball Stadium	1
Board Shop	1
Burmese Restaurant	1
Bus Line	1
Cambodian Restaurant	1
Candy Store	1
Cantonese Restaurant	1
Casino	1
College Gym	1
College Quad	1
Community Center	1
Construction & Landscaping	1
Dim Sum Restaurant	1
Dry Cleaner	1
Event Service	1
Eye Doctor	1
Field	1
Food Service	1
Forest	1
Garden Center	1
Gay Bar	1
German Restaurant	1
Hostel	1

Intersection	1
Jazz Club	1
Jewish Restaurant	1
Karaoke Bar	1
Laundry Service	1
Martial Arts Dojo	1
Meze Restaurant	1
Monument / Landmark	1
Moroccan Restaurant	1
Motorcycle Shop	1
Moving Target	1
Multiplex	1
Music Store	1
Office	1
Other Great Outdoors	1
Paper / Office Supplies Store	1
Pedestrian Plaza	1
Pilates Studio	1
Poutine Place	1
Racetrack	1
Rental Service	1
Resort	1
Shanghai Restaurant	1
Shoe Store	1
Shopping Plaza	1
Skate Park	1
Smoothie Shop	1
Soccer Field	1
Souvenir Shop	1
Spanish Restaurant	1
Stadium	1
Supplement Shop	1
Szechuan Restaurant	1
Tattoo Parlor	1
Taxi	1
Theme Park Ride / Attraction	1
Tiki Bar	1
Tourist Information Center	1
Tunnel	1
Video Game Store	1
Warehouse Store	1

Table B. Venues per Neighborhood

Neighborhood	Count
Allston	100
Assembly Square	100
Back Bay	100
Beacon Hill	100
Central Square	100
Chinatown/Leather District	100
Davis Square	100
Downtown	100
East Cambridge	100
Fenway/Kenmore	100
Harvard Square	100
Inman Square	100
North End	100
Porter Square	100
Seaport	100
South End	100
West End	100
East Boston	89
Brighton	77
Winter Hill	69
South Boston	66
Jamaica Plain	60
Chestnut Hill	58
Mission Hill	57
Roslindale	53
Brookline Village	51
West Roxbury	45
Dorchester	39
Hyde Park	38
Charlestown	37
Mattapan	32
North Cambridge	27
Roxbury	27
West Cambridge	26

Table C1. Final Results – All Neighborhoods Scored (First half)

Index	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	11th Most Common Venue	12th Most Common Venue
29	South End	Italian Restaurant	American Restaurant	Wine Bar	French Restaurant	Wine Shop	Pet Store	Mexican Restaurant	Café	Gym / Fitness Center	Coffee Shop	Thai Restaurant	Park
2	Back Bay	Clothing Store	Seafood Restaurant	Spa	Park	Italian Restaurant	Coffee Shop	Gym	Bakery	Wine Shop	New American Restaurant	Mediterranean Restaurant	Shopping Mall
3	Beacon Hill	Coffee Shop	Italian Restaurant	Hotel	Historic Site	French Restaurant	Pizza Place	Seafood Restaurant	Park	Steakhouse	American Restaurant	Boat or Ferry	Theater
23	North End	Italian Restaurant	Park	Seafood Restaurant	Pizza Place	Hotel	Bakery	Coffee Shop	Historic Site	Sandwich Place	Yoga Studio	Aquarium	Beer Garden
28	South Boston	Coffee Shop	Pizza Place	Park	Convenience Store	Italian Restaurant	Diner	Beach	New American Restaurant	Furniture / Home Store	Breakfast Spot	Bar	Pub
25	Roslindale	Pizza Place	Chinese Restaurant	Bakery	Italian Restaurant	Grocery Store	Convenience Store	Park	Coffee Shop	Sandwich Place	Liquor Store	Bar	Yoga Studio
31	West End	Hotel	Italian Restaurant	Bakery	Park	Seafood Restaurant	Pizza Place	Historic Site	Coffee Shop	Science Museum	Yoga Studio	Bar	Deli / Bodega
30	West Cambridge	Grocery Store	American Restaurant	Italian Restaurant	Restaurant	Auto Garage	BBQ Joint	Bakery	Liquor Store	Baseball Field	Park	Athletics & Sports	Chinese Restaurant
27	Seaport	Seafood Restaurant	Hotel	Italian Restaurant	Steakhouse	Coffee Shop	Restaurant	Asian Restaurant	Gym	Brewery	French Restaurant	Mexican Restaurant	Bakery
8	Chestnut Hill	Baseball Field	American Restaurant	Furniture / Home Store	Tennis Court	Italian Restaurant	Mobile Phone Shop	Grocery Store	Ice Cream Shop	Bank	Seafood Restaurant	Salon / Barbershop	Museum
12	Downtown	Park	Coffee Shop	Hotel	Italian Restaurant	Historic Site	Sandwich Place	Seafood Restaurant	American Restaurant	Bakery	Pizza Place	Tea Room	Restaurant
6	Central Square	Coffee Shop	Vegetarian / Vegan Restaurant	New American Restaurant	Sandwich Place	Bakery	Italian Restaurant	Bar	Nightclub	Park	Lounge	Cocktail Bar	Tea Room
13	East Boston	Rental Car Location	Mexican Restaurant	Italian Restaurant	Latin American Restaurant	Pizza Place	Liquor Store	Café	Convenience Store	Donut Shop	Bakery	Park	Sandwich Place
1	Assembly Square	Clothing Store	Donut Shop	Mexican Restaurant	Coffee Shop	American Restaurant	Restaurant	Sporting Goods Shop	Video Store	Ice Cream Shop	Pizza Place	Park	Bar
21	Mission Hill	Art Museum	Pizza Place	Café	Donut Shop	Sandwich Place	Art Gallery	Sushi Restaurant	Falafel Restaurant	Gym	Park	Coffee Shop	Rental Car Location
16	Harvard Square	Café	Bookstore	American Restaurant	Gastropub	Coffee Shop	Plaza	Burger Joint	Spa	Park	Record Shop	New American Restaurant	Pizza Place
18	Inman Square	New American Restaurant	Coffee Shop	Bar	Bakery	Portuguese Restaurant	Pub	Brewery	Gastropub	Ice Cream Shop	Cocktail Bar	Pizza Place	Sandwich Place
24	Porter Square	Park	Café	Japanese Restaurant	Ice Cream Shop	American Restaurant	Gift Shop	Mexican Restaurant	Gym	Thai Restaurant	Bar	Bakery	Poke Place
14	East Cambridge	Coffee Shop	Park	Hotel	American Restaurant	Pizza Place	Science Museum	Café	Mediterranean Restaurant	Art Gallery	Bar	Sandwich Place	Italian Restaurant
22	North Cambridge	Grocery Store	Park	Trail	Gym	Seafood Restaurant	Bar	Organic Grocery	Café	Liquor Store	Dive Bar	Mexican Restaurant	Bistro
19	Jamaica Plain	Bakery	Park	Pizza Place	Coffee Shop	Ice Cream Shop	Pub	Donut Shop	Bookstore	Thrift / Vintage Store	Art Gallery	Yoga Studio	Accessories Store
0	Allston	Korean Restaurant	Thai Restaurant	Chinese Restaurant	Mexican Restaurant	Pizza Place	Sushi Restaurant	Coffee Shop	Fried Chicken Joint	Falafel Restaurant	Donut Shop	Bar	Taco Place
33	Winter Hill	Pizza Place	Donut Shop	Park	Mexican Restaurant	General Entertainment	Music Venue	Brazilian Restaurant	New American Restaurant	Spa	Ice Cream Shop	Gym / Fitness Center	Harbor / Marina
15	Fenway/Kenmore	American Restaurant	Hotel	Café	Burger Joint	Bakery	Coffee Shop	Lounge	Vietnamese Restaurant	Mexican Restaurant	Gym	Baseball Field	Pizza Place
10	Davis Square	Mexican Restaurant	Breakfast Spot	Park	Indian Restaurant	Café	Ramen Restaurant	Pizza Place	Liquor Store	Yoga Studio	Thai Restaurant	Middle Eastern Restaurant	Ice Cream Shop
17	Hyde Park	Pizza Place	American Restaurant	Skating Rink	Baseball Field	Grocery Store	Gym	Yoga Studio	Liquor Store	Gas Station	Storage Facility	Fried Chicken Joint	Fast Food Restaurant
5	Brookline Village	Park	Coffee Shop	Mexican Restaurant	Hotel	Pizza Place	Gastropub	Metro Station	Donut Shop	Liquor Store	Chinese Restaurant	Bar	Laundry Service
20	Mattapan	Pizza Place	Caribbean Restaurant	Donut Shop	Pharmacy	Bakery	Construction & Landscaping	Rental Car Location	Southern / Soul Food Restaurant	Nail Salon	Food	Convenience Store	Skating Rink
4	Brighton	Pizza Place	Chinese Restaurant	Bakery	Grocery Store	Sushi Restaurant	Pub	Convenience Store	Café	Donut Shop	Coffee Shop	Bank	Thai Restaurant
7	Charlestown	Pizza Place	Gastropub	Café	Grocery Store	History Museum	Coffee Shop	Theater	National Park	Donut Shop	Liquor Store	Bar	Yoga Studio
9	Chinatown/Leather District	Bakery	Coffee Shop	Sandwich Place	Chinese Restaurant	Asian Restaurant	Park	Theater	Performing Arts Venue	Mexican Restaurant	Sushi Restaurant	Café	Bubble Tea Shop

Table C2. Final Results – All Neighborhoods Scored (Second half)

Index	Neighborhood	13th Most Common Venue	14th Most Common Venue	15th Most Common Venue	16th Most Common Venue	17th Most Common Venue	18th Most Common Venue	19th Most Common Venue	20th Most Common Venue	Main Score	Number of Matches	Match Score	Total Score
29	South End	Bakery	Japanese Restaurant	Gastropub	Mediterranean Restaurant	Pizza Place	Asian Restaurant	Bar	Gift Shop	1	4	0.8	0.9
2	Back Bay	Plaza	Salad Place	Steakhouse	Ice Cream Shop	Hotel	Sushi Restaurant	Gym / Fitness Center	Jewelry Store	0.75	5	1	0.875
3	Beacon Hill	Hotel Bar	Scenic Lookout	Bakery	Bar	Gym / Fitness Center	Market	Restaurant	Gourmet Shop	0.9	4	0.8	0.85
23	North End	Boat or Ferry	American Restaurant	Greek Restaurant	Gastropub	Church	Boutique	Ski Chalet	Skating Rink	1	3	0.6	0.8
28	South Boston	Donut Shop	Dive Bar	Sports Bar	American Restaurant	Restaurant	Bowling Alley	IT Services	Ice Cream Shop	0.75	4	0.8	0.775
25	Roslindale	American Restaurant	Frozen Yogurt Shop	Bus Line	Mexican Restaurant	Indian Restaurant	Restaurant	Ice Cream Shop	Big Box Store	0.75	4	0.8	0.775
31	West End	Mexican Restaurant	French Restaurant	Gourmet Shop	Grocery Store	Scenic Lookout	Sandwich Place	Salon / Barbershop	Salad Place	0.9	3	0.6	0.75
30	West Cambridge	Sushi Restaurant	Cheese Shop	Other Great Outdoors	New American Restaurant	Lounge	Fish Market	Coffee Shop	Pizza Place	0.9	3	0.6	0.75
27	Seaport	Bar	Clothing Store	Art Museum	New American Restaurant	Mediterranean Restaurant	Scenic Lookout	Park	Deli / Bodega	0.9	3	0.6	0.75
8	Chestnut Hill	Boutique	Coffee Shop	French Restaurant	Steakhouse	Forest	Food Truck	Clothing Store	Chinese Restaurant	0.75	3	0.6	0.675
12	Downtown	Deli / Bodega	Café	Salad Place	Market	Greek Restaurant	Steakhouse	Sushi Restaurant	History Museum	0.75	3	0.6	0.675
6	Central Square	Pizza Place	Pub	Brewery	Bookstore	Sushi Restaurant	Yoga Studio	Gym / Fitness Center	Tibetan Restaurant	0.5	4	0.8	0.65
13	East Boston	Chinese Restaurant	Airport	Art Gallery	Airport Terminal	Pharmacy	Fried Chicken Joint	Bank	Metro Station	0.9	2	0.4	0.65
1	Assembly Square	Steakhouse	Brazilian Restaurant	Gym	Café	Sandwich Place	Seafood Restaurant	Italian Restaurant	Furniture / Home Store	0.2	5	1	0.6
21	Mission Hill	Italian Restaurant	American Restaurant	Furniture / Home Store	Burger Joint	Museum	Bookstore	Liquor Store	Caribbean Restaurant	0.33	4	0.8	0.565
16	Harvard Square	Food Truck	Music Venue	Mexican Restaurant	Theater	Ice Cream Shop	Italian Restaurant	Vegetarian / Vegan Restaurant	Bakery	0.2	4	0.8	0.5
18	Inman Square	Juice Bar	Peruvian Restaurant	Mediterranean Restaurant	Comfort Food Restaurant	Vegetarian / Vegan Restaurant	Italian Restaurant	Tapas Restaurant	Grocery Store	0.2	4	0.8	0.5
24	Porter Square	Indian Restaurant	Pizza Place	Burrito Place	Chinese Restaurant	Italian Restaurant	Pub	Deli / Bodega	Ramen Restaurant	0.2	4	0.8	0.5
14	East Cambridge	Chinese Restaurant	Lingerie Store	Bakery	Hotel Bar	French Restaurant	Liquor Store	Vietnamese Restaurant	Cosmetics Shop	0.33	3	0.6	0.465
22	North Cambridge	Sri Lankan Restaurant	Middle Eastern Restaurant	Greek Restaurant	Chinese Restaurant	Track	Pet Store	Japanese Restaurant	Italian Restaurant	0.2	2	0.4	0.3
19	Jamaica Plain	American Restaurant	Rock Club	Harbor / Marina	Seafood Restaurant	New American Restaurant	Food & Drink Shop	Library	Record Shop	0	3	0.6	0.3
0	Allston	Rock Club	Japanese Restaurant	Café	Gastropub	Seafood Restaurant	Ice Cream Shop	Gift Shop	Vietnamese Restaurant	0	3	0.6	0.3
33	Winter Hill	Convenience Store	Pharmacy	Market	Sporting Goods Shop	Falafel Restaurant	Meze Restaurant	South American Restaurant	Flower Shop	0	3	0.6	0.3
15	Fenway/Kenmore	Bookstore	Thai Restaurant	Donut Shop	Clothing Store	Sandwich Place	Art Museum	Middle Eastern Restaurant	Concert Hall	0	3	0.6	0.3
10	Davis Square	Hobby Shop	Greek Restaurant	Gourmet Shop	Gastropub	Gift Shop	Burrito Place	American Restaurant	Vegetarian / Vegan Restaurant	0	2	0.4	0.2
17	Hyde Park	Skate Park	Bank	Event Space	Business Service	Donut Shop	Sandwich Place	Chinese Restaurant	Discount Store	0	2	0.4	0.2
5	Brookline Village	Sushi Restaurant	French Restaurant	Dive Bar	Salon / Barbershop	Sporting Goods Shop	Tapas Restaurant	Pet Service	Music Venue	0	2	0.4	0.2
20	Mattapan	Event Service	Scenic Lookout	Liquor Store	Bank	BBQ Joint	American Restaurant	Ice Cream Shop	Indian Restaurant	0	2	0.4	0.2
4	Brighton	Pet Store	Deli / Bodega	Sandwich Place	Pharmacy	Greek Restaurant	Bar	Nail Salon	Dry Cleaner	0	2	0.4	0.2
7	Charlestown	Lounge	Seafood Restaurant	Metro Station	Monument / Landmark	Moroccan Restaurant	Park	Thai Restaurant	Plaza	0	2	0.4	0.2
9	Chinatown/Leather District	Salad Place	Spa	Tea Room	Hotel	Seafood Restaurant	Historic Site	French Restaurant	Opera House	0	1	0.2	0.1