STONA YOGA IN SEATTLE, WASHINGTON

Anel Button

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1. Introduction

1.1   Background

"If you do what you love, you'll never work a day in your life", this famous quote by Marc Anthony is the inspiration for this report. An experienced yoga teacher and part time marijuana smoker has decided to combine her two loves and open a Stona Yoga studio in Seattle, Washington (for the purpose of this report, we will refer to her as Mary Jane or MJ). A Stona Yoga studio is similar to a regular yoga studio with the difference being that before class in a Stona Yoga studio, the teacher and students smoke and share a joint. Sharing a joint before a class can help build community and alleviate anxieties for newcomers and the more socially cautious individuals.

According to Health Europa and the Medical Cannabis Network [1] some of the health benefits of smoking cannabis include increased lung capacity, regulation and prevention of diabetes, helps with weight loss, relieves depression and anxiety as well as aids in inflammatory conditions. A benefit of adding cannabis to the yoga practice is an increased mind-body-breath connection, this allows people to have a deeper experience [2]. Cannabis also relaxes the body and helps you to feel less pain, allowing deeper stretching.

Because cannabis is a controlled substance, a Stona Yoga studio can only be opened in an area where cannabis is legalized for recreational use. The recreational use of marijuana in Washington state has been legal since 2012.

1.2   Problem

Mary Jane wants to asses the feasibility of opening a Stona Yoga studio in the northern and central areas of Seattle, Washington and find out which neighborhood would be the best place to do so.
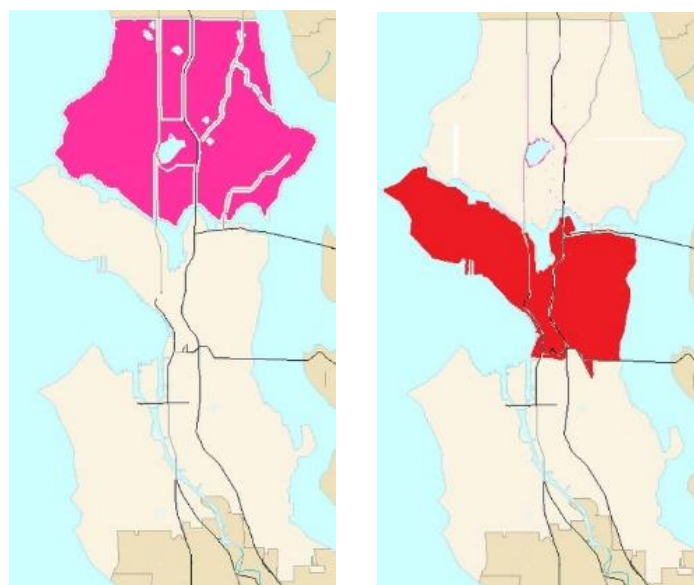

Figure 1: North (left) and Central (right) Seattle [3]

1.3 Interest

This report and the research contained within it is mainly aimed at Mary Jane to assist her in deciding whether to open up a Stona Yoga studio in Seattle, Washington and to point out the best neighborhood for her business. This report can also provide information to prospective business owners in the marijuana or fitness industries.

2. Data Gathering and Cleaning

2.1 Data Sources

A list of all the neighborhoods in Seattle can be found [4]. This list is used as the basis for neighborhood analysis. From this list, the northern and central neighborhoods will be extracted as these are the areas to which Mary Jane has the easiest accessibility.

Once a list of the northern and central neighborhoods of Seattle are available, the coordinates for each neighborhood will be gathered using the Geopy library in Python. "Geopy makes it easy for Python developers to locate the coordinates of addresses, cities, countries, and landmarks across the globe using third-party geocoders and other data sources." [5]

From here the list of neighborhoods, with their coordinates, will be used to pull location data from Foursquare. Foursquare is an "independent location data platform for understanding how people move through the real world" [6]. The location data provided by foursquare will help to analyse the different neighborhoods and determine if and where the most feasible spot is for Mary Jane's Stona Yoga studio.

2.2 Data Cleaning

2.2.1 Neighborhood Data

When initially imported from the link above, the list of neighborhoods in Seattle, contained special characters, numerical values and different formats for the same district. The data in the list was cleaned to remove special characters (", {, [], /, etc.), to standardise district names and remove numerical values.

	Neighborhood	District
0	Broadview	North Seattle
1	Bitter Lake	North Seattle
2	North Beach	North Seattle
3	Crown Hill	North Seattle
4	Greenwood	North Seattle
5	Northgate	North Seattle
6	Haller Lake	Northgate
7	Pinehurst	Northgate

Figure 2: List of Neighborhoods in North and Central Seattle

2.2.2 Geographical Data

The dataframe in figure 2, was used to pull each neighborhood's coordinates using Geopy. The dataframe was updated to include the coordinates in two new columns, 'Latitude' and 'Longitude'.

Geopy could not find the coordinates for 2 neighborhoods of the 43 neighborhoods. It was decided to drop these neighbourhoods and only work with the resulting 41 neighborhoods.

An example of the resulting data frame can be found in figure 3 below:

	Neighborhood	District	Latitude	Longitude
0	Broadview	North Seattle	47.722320	-122.360407
1	Bitter Lake	North Seattle	47.726236	-122.348764
2	North Beach	North Seattle	47.696210	-122.392362
3	Crown Hill	North Seattle	47.694715	-122.371459
4	Greenwood	North Seattle	47.690981	-122.354877
5	Northgate	North Seattle	47.713153	-122.321231

Figure 3: North and Central Seattle Neighborhoods with Coordinates

2.2.3 Location Data

Because neighborhoods aren't the same size, duplicate venues will show up in different neighborhoods where the constant radius, for which location data is searched, overlaps. To work past this, the neighborhoods will be clustered together into 25 clusters. See the figure below for a map of north and central Seattle, first with the neighborhoods superimposed on it and secondly with the clusters superimposed. From figure 4 it is clear that the clusters are more evenly spaced out and will result in less duplicate venues, given a set radius.
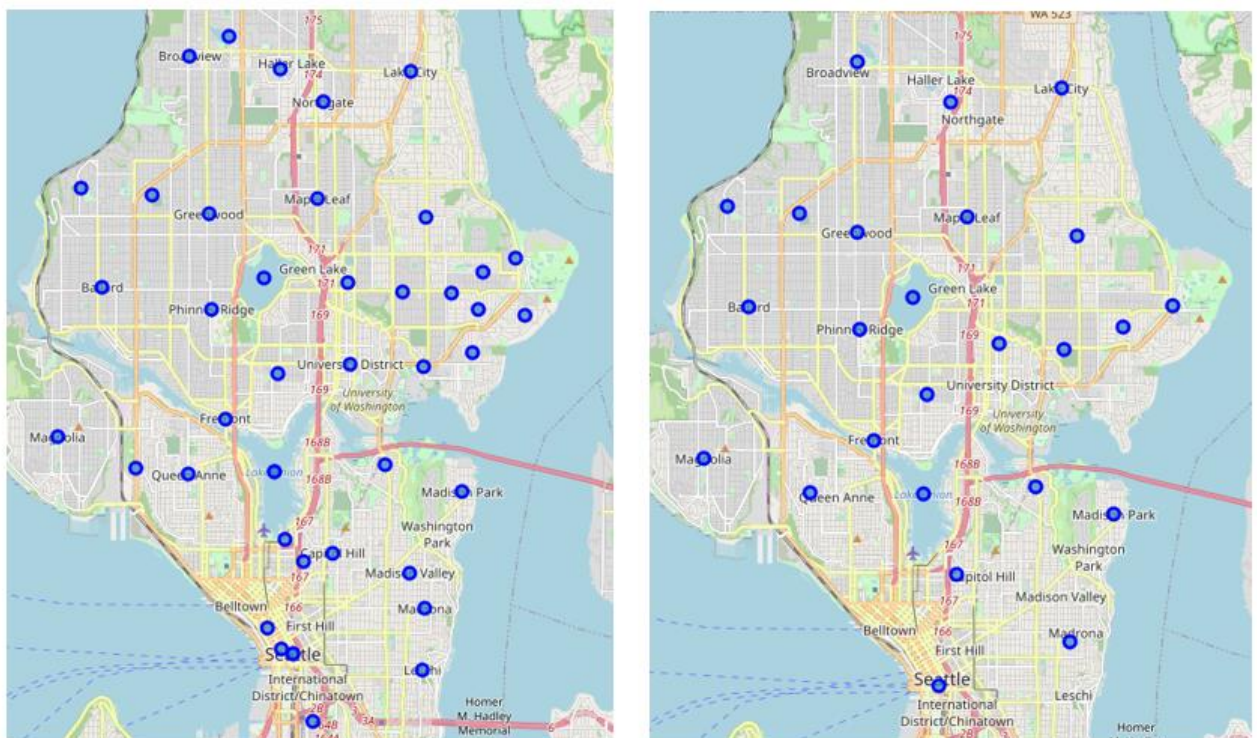
Figure 4: Neighborhoods (left) vs Clusters (right)

The dataframe with the clusters' information will be used to pull location data from Foursquare, focussing on yoga studios already available in each cluster. Once this information is available, each cluster will be analysed in more depth.

3. Exploratory Data Analysis

Now that the neighborhoods in north and central Seattle have been clustered into 25 groups, these clusters can be analysed to find the best, if any, neighborhood for Mary Jane to start her Stona Yoga studio.

When analysing neighborhoods for starting a business, some of the key factors to consider include:

- If there are other businesses in the area offering the same service.
- If there are other businesses in the area offering similar services.
- If there are business in the area that provide a product or service that can be used in conjunction with the product/service under analysis.
- If there are successful businesses in the area in the same category as the one in question.

The above criteria can be divided into rival and supportive businesses. The ideal area to start a new business will have little or no rival businesses and at least some supportive businesses.

For this study, Foursquare will be used to pull location data on 2 types of rival and 2 types of supportive businesses in each cluster. Figure 5 below provides the types of businesses that will be looked at.

Rival Businesses		Supportive Businesses	
🔴	Yoga studios	🟡	Healthy, organic food
🟠	Fitness centres or Gyms	🟢	Cannabis Dispensaries

Figure 5: Rival and Supportive Businesses

3.1   Yoga Studios

The first type of rival business that will be looked at is yoga studios. Seeing as the business Mary Jane wants to open is a yoga studio, it would not make sense for her to open her studio in a neighborhood where there are existing yoga studios as these will be in direct competition with her studio.

Using the latitude and longitude of each cluster, location data on yoga studios were pulled. The search returned 26 yoga studios and the results of this search can be seen in figure 6 below, where yoga studios are indicated by red circles.
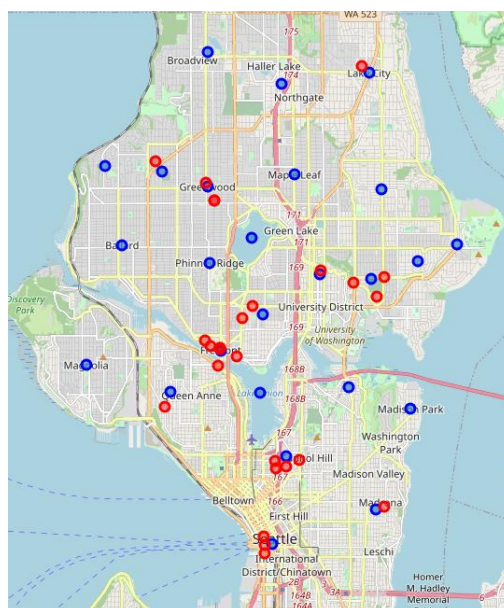

Figure 6: Yoga Studios in north and central Seattle

3.2 Gymnasiums and Fitness Centres

The second type of rival businesses that will be looked at are fitness centres or gymnasiums. These are secondary type of rival businesses as they do not provide the exact same service. Fitness centres of gymnasiums might indicate that a neighborhood is active and values exercise but people who already have a membership at a fitness centre are less likely to take out another membership at a similar type of business.

Using the data of the 25 clusters identified in section 2.2.3, location data on fitness centres and gymnasiums were pulled and illustrated in figure 7 below. Existing fitness centres/gyms are indicated by orange circles – 62 fitness centres were returned.
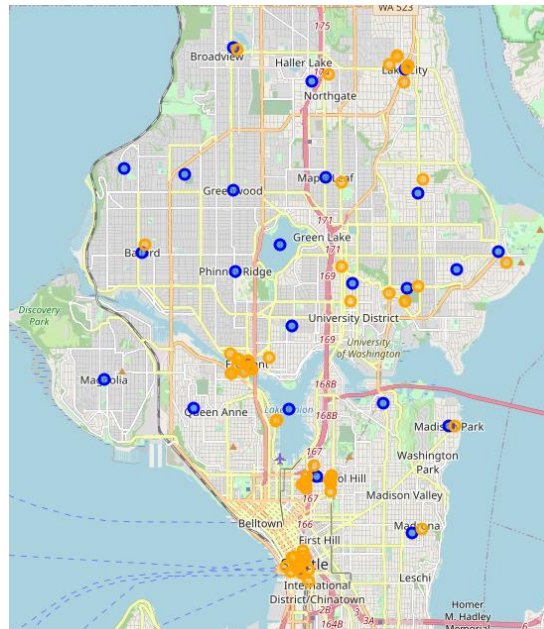
Figure 7: Fitness Centres in north and central Seattle

3.3 Cannabis Dispensary

The primary type of supportive businesses for a Stona yoga studio would be cannabis dispensaries or marijuana stores. These types of venues indicate that the neighborhood shows interest in and uses cannabis and might enjoy cannabis related activities. Having a dispensary close to a Stona yoga studio, can increase the ease of obtaining cannabis for the classes.

Using the latitude and longitude of each cluster, location data on cannabis dispensaries were pulled. The results of this search returned 8 venues can be seen in figure 8 below, where dispensaries are indicated by green circles.
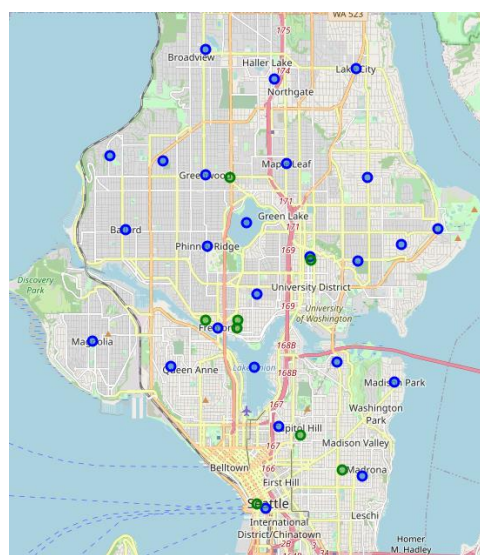

Figure 8: Dispensaries in north and central Seattle

3.4   Healthy and Organic Food

The secondary type of supportive businesses for a Stona yoga studio would be health and organic food stores. Neighborhoods that value healthy food likely also value exercise. It also makes it convenient for people to stop by the health food store after a yoga class to fill up on nutritious food.

Using the data of the 25 clusters identified in section 2.2.3, location data on health food stores were pulled and illustrated in figure 9 below. Existing organic food stores are indicated by yellow circles – 39 results were returned.
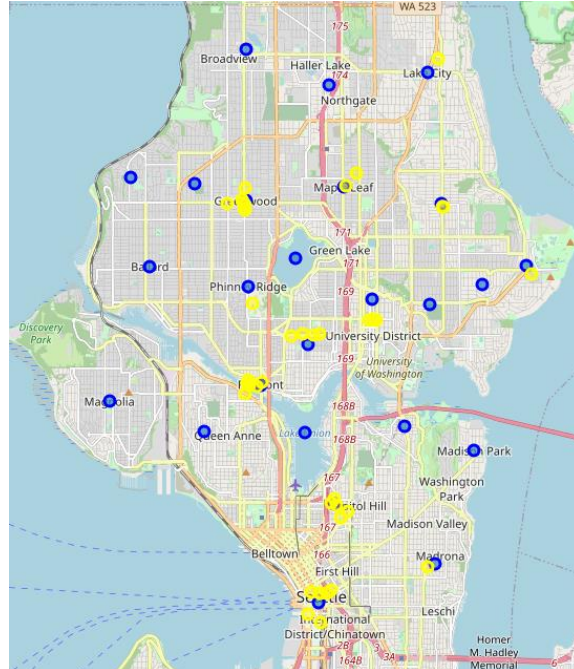
Figure 9: Organic Food Stores in north and central Seattle

3.5   Consolidated Map of Venues

The location data regarding primary and secondary rival and supportive businesses was used to create a consolidated map, given in figure 10. On this map rival yoga studios and fitness centres are indicated by red and orange circles respectively. Supportive businesses such as health food stores and cannabis dispensaries are showed by yellow and green circles.
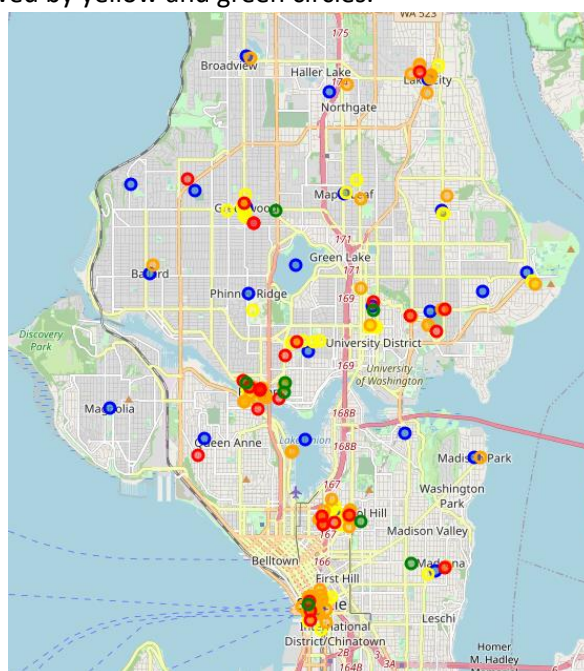

Figure 10: Consolidated map of venues in north and central Seattle

4. Results & Discussion

Now that location data on all clusters have been pulled, the results can be consolidated and classified. The clusters, and resultingly the neighborhoods, will be divided into the following categories:

- BEST – These are the best clusters/neighborhoods for Mary Jane to start her Stona Yoga studio. These include clusters that have no rival businesses and do have supporting businesses.
- GOOD – These are good neighborhoods for Mary Jane to consider, they have no rival businesses but also no supporting businesses.
- AVERAGE – These are average neighborhoods for Mary Jane's studio. These neighborhoods have secondary rival businesses (fitness centres but no yoga studios), with or without secondary supporting businesses.
- POOR – These are neighborhoods where Mary Jane's studio will not be a good fit as they already have existing yoga studios, primary rival businesses.
- WORST – These are the worst neighborhoods for Mary Jane to open her business, these are the neighborhoods to avoid. They have existing primary and secondary rival businesses.

The figure (11) below represents these classifications of the 25 clusters analysed in north and central Seattle, WA. Yoga Studios are indicated by red circles, fitness centres by orange, organic food stores by yellow and dispensaries by green circles.

Classification:	BEST	GOOD	AVERAGE	POOR	WORST
Venues Present:	🟢🟡		🟠🟡	🔴🟢🟡	🔴🟠🟢🟡
Venues Absent:	🔴🟠	🔴🟠🟢🟡	🔴🟢	🟠	
Clusters:		2, 6, 7, 16, 21, 24	0, 1, 4, 5, 9, 10, 17, 18	12, 15, 20, 23	3, 8, 11, 13, 14, 19, 22

Figure 11: Cluster Classification

Figure 11 displays the following: There are no 'Best' or optimal clusters of neighborhoods in north and central Seattle, WA for Mary Jane's Stona Yoga studio. Some 'Good' neighborhoods exist for her business, these neighborhoods can be seen in figure 12 below and should be her primary considerations:

	Cluster Labels	Neighborhood	District	Latitude	Longitude
2	2	North Beach	North Seattle	47.696210	-122.392362
12	16	View Ridge	North Seattle	47.679543	-122.274014
16	16	Bryant	North Seattle	47.675233	-122.283493
18	16	Hawthorne Hills	North Seattle	47.672043	-122.275403
19	16	Laurelhurst	North Seattle	47.663432	-122.277070
22	7	Green Lake	North Seattle	47.678284	-122.338549
24	24	Phinney Ridge	North Seattle	47.672131	-122.354031
27	6	Magnolia	Central Seattle	47.646811	-122.399489
31	21	Montlake	Central Seattle	47.641408	-122.303044

Figure 12: 'Good' Neighborhoods for Stona Yoga

If none of the neighborhoods in the 'Good' category are found to be ideal, Mary Jane might consider some neighborhoods in the 'Average' category. These neighborhoods don't have any rival yoga studios, but they do have secondary rivals such as fitness centres or gymnasiums. These neighborhoods can be seen in figure 13.

	Cluster Labels	Neighborhood	District	Latitude	Longitude
0	10	Broadview	North Seattle	47.722320	-122.360407
1	10	Bitter Lake	North Seattle	47.726236	-122.348764
5	4	Northgate	North Seattle	47.713153	-122.321231
6	4	Haller Lake	Northgate	47.719748	-122.333751
9	18	Maple Leaf	Northgate	47.693987	-122.322905
11	1	Wedgwood	North Seattle	47.690253	-122.290811
13	9	Sand Point	North Seattle	47.682359	-122.264312
17	9	Windermere	North Seattle	47.670932	-122.261792
25	17	Ballard	North Seattle	47.676507	-122.386223
26	0	Lake Union	North Seattle	47.639919	-122.335558
33	5	Madison Park	Central Seattle	47.635930	-122.280196
34	0	Lake Union	North Seattle	47.639919	-122.335558

Figure 13: 'Average' Neighborhoods for Stona Yoga

4.1 Good Neighborhoods

The list of neighborhoods in the 'Good' category was further analysed to determine the types of venues that exist in these neighborhoods. In figure 14 below, the neighborhoods are listed with their number of different types of venue categories as well as their top 3 most common venues.

From this figure it is can be seen that the neighborhoods do not seem to be highly populated with businesses/venues. The two most populated neighborhoods are Phinney Ridge and Montlake. Most neighborhoods have parks as their top venue categories, which might indicate that fitness is valued in these neighborhoods.

Neighborhood	Venue Category	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
Bryant	2	Wine Shop	Organic Grocery	Zoo Exhibit
Green Lake	8	Park	Lake	Trail
Hawthorne Hills	6	American Restaurant	Bank	Hardware Store
Laurelhurst	5	Pharmacy	Café	Park
Magnolia	4	Pool	Bus Stop	Video Store
Montlake	14	Bus Stop	Grocery Store	American Restaurant
North Beach	4	Beach	Scenic Lookout	Park
Phinney Ridge	32	Zoo Exhibit	Pizza Place	Park
View Ridge	3	Park	Construction & Landscaping	Zoo Exhibit

Figure 14: 'Good' Neighborhood Venue Categories

4.2 Recommendations

Following the results from the above sections, the following recommendations can be made to Mary Jane:

- There are no ideal or optimal neighborhoods for her business.
- Some good neighborhoods exist for her to consider.
- Some average neighborhoods exist for consideration should none of the good neighborhoods work out.
- Mary Jane is to steer clear of the 'poor' and 'worst' neighborhoods.
- From the good neighborhoods, Phinney Ridge and Montlake seem to be the most venue dense and is the recommended point to start further investigations for Mary Jane.

5. Conclusion

The aim of this report was to determine the feasibility of opening a Stona Yoga studio in north or central Seattle, WA and to determine the best neighborhood to do so.

Neighborhoods in north and central Seattle were analysed using location data provided by Foursquare. The location data was categorised into primary and secondary rival and supporting venues. The results were then further categorised into 'Best', 'Good', 'Average', 'Poor' and 'Worst' neighborhoods for opening Mary Jane's studio.

No 'Best' or optimal locations were found but the results did return some 'Good' and 'Average' neighborhoods for consideration. It is recommended that Mary Jane steers clear of 'Poor' and 'Worst' neighborhoods as these already have primary and/or secondary rival businesses.

The 'Good' neighborhoods were further analysed to determine what type of venues exist in those neighborhoods and it was found that the neighborhoods weren't venue dense. The densest neighborhoods were Phinney Ridge and Montlake. These are the recommended neighborhoods for Mary Jane to start further investigation for her business venture.

Outside the scope of this report, Mary Jane can go look for available venues to rent in the 'Good' and/or 'Average' neighborhoods. She might also investigate the populations of these neighborhoods to determine if there are enough people around who might be interested in her service.