Hanami and Ramen

1 Introduction

Hanami ("flower viewing") is the traditional custom of viewing and enjoying the beauty of flowers (mainly cherry blossoms) and springtime in Japan. Each year the *cherry blossom front*, the advance of blooming of cherry blossoms across Japan, is tracked as it slowly moves northward. The front generally indicates the opening of the first blossoms (kaika) rather than the arrival of full bloom (mankai). Forecasts for the cherry blossom front by are closely followed by those who wish to enjoy hanami as the blossoms only last for one to two weeks.

To enjoy Hanami, one can admire from a distance in which the cherry blossoms have been described as appearing as beautiful clouds or have a picnic under the blooming trees. But why not enjoy a nice stroll in a park after enjoying a nice meal such as a bowl of Ramen. Here is a little info on Ramen.

While the exact origins of ramen noodles is up to debate (Japan or China origin), what is not up for debate is how Ramen shops across Japan have really made Ramen their own. As the name suggest, Ramen shops specialize in ramen dishes. Ramen in simple terms are wheat-flour noodles served in broth. But Ramen is anything but simple. With over more than 10,000 ramen shops in Japan, each shop provides a different take on the dish of Ramen.

The goal of this project is to try to find the best locations/spots in Japan in which to enjoy both Hanami and Ramen from **April 15th to May 15th**. Best in this instance, refers to **promixity to train station**, **recommendation**, and **Ramen shops** located nearby.

Note: Hanami Spots and Viewing Spots are used interchangeably throughout the project.

2 Data

With the criteria mention in the Introduction, factors that influenced our decision were:

- Timing of cherry blossoming in cities across Japan
- Proximity to a train station
- Recommended Cherry Blossom viewing spots (Hanami) spots
- Ramen shops located close to Hanami spots

Following data sources were used to extract/generate the required information:

- Average Cherry Blossoms blooming dates using data gathered from: https://www.japan-guide.com/e/e2011_when.html.
- Recommended Cherry Blossom viewing spots gathered from: https://www.japan-guide.com/e/e2011_where.html

- **Google Places API** was used to obtain the coordinates of each recommended viewing spot. The coordinates were used to obtain the region for each of the recommended viewing spots by use of information found on Wikipedia.
- Ramen shops and Train stations around each recommended Hanami spot were obtained using the **Foursquare API**

With the data collected, locations were narrowed down based off the criteria mentioned above.

2.1 Average Cherry Blossoms blooming dates

The typical timing for the blooming of cherry blossoms in cities across Japan was obtained.

This information was found from the following source https://www.japan-guide.com/e/e2011_when.html.

The data is contained within a table on the webpage, meaning the data can be read directly into a pandas dataframe.

Only the cities which are typically in full bloom from April 15th to May 15th were stored within the `averageBlooming_df` dataframe.

Table 1: `averageBlooming_df`: Cities Blooming dates between April 15th to May 15th

CITY	AVERAGE_OPENING	AVERAGE_FULL_BLOOM
Sapporo	May 3	May 7
Hakodate	April 30	May 4
Hirosaki	April 23	April 28
Sendai	April 11	April 16
Matsumoto	April 10	April 15
Takayama	April 15	April 20

2.2 Cherry Blossom Viewing Spots

Recommendations for the best cherry blossom viewing spots (Hanami Spots) can be found at https://www.japan-guide.com/e/e2011_where.html.

The information for the different recommended Cherry Blossom Viewing Spots were scraped and loaded into a panadas dataframe, `viewingSpot_df`. The information of interest collected for each recommended viewing spot was:

- City
- Viewing Spot Name
- Description
- Ratings
- Ratings Description

A total of 48 recommended viewing spots across Japan are listed on the site. On inspection, the information for each recommended viewing spot seemed to be incomplete. Some data cleaning was conducted and will be discussed in the following subsections.

2.2.1 Obtaining geographical information for the recommended Viewing Spots

The `CITY` column in `viewingSpot_df` contained some values which aren't exactly cities.

Reverse geocoding through the use of the Google Places API was used to obtain the geographical information for each of the viewing spots to determine the city, prefecture, and coordinates for each of the viewing spots.

2.2.2 Finding the region for each of the locations within viewingSpot_df.

The geographical information for each of the recommended viewing spots was used to find the region in which each location are within. This was accomplished by accessing a table located at Wikipedia, which lists each prefecture with corresponding region.

The final thing to do was to only concentrate on those recommended viewing spots located within one of the cities found within the `averageBlooming_df` dataframe and left with an updated version of `viewingSpot_df`.

Table 2: `viewingSpot_df`: Recommended Hanami Spots for April 15th to May 15th

VIEWING SPOT	CITY	PREFECTURE	REGION	LATITUDE	LONGITUDE	RATING	RATING DESCRIPTION
Maruyama Park and Hokkaido Shrine	Sapporo	Hokkaido	Hokkaido	43.055745	141.312607	1	Recommended
Goryokaku Fort	Hakodate	Hokkaido	Hokkaido	41.794670	140.754020	2	Highly Recommended
Hirosaki Castle	Hirosaki	Aomori	Tohoku	40.607452	140.464180	3	Best of Japan
Mikamine Park	Sendai	Miyagi	Tohoku	38.224822	140.857414	1	Recommended
Matsumoto Castle	Matsumoto	Nagano	Chubu	36.238653	137.968867	2	Highly Recommended

```
Number of recommended viewing spots from April 15th to May 15th: 5
```

2.3 Venues near Recommended Viewing Spots

Utilizing the **FourSquare** API, venues within a 1.25 mile (2120 meters) radius each of the recommended viewing spots were obtained. In this case, the venues of interest were **Ramen Restaurants** and **Train Stations**. This information was stored within a dataframe, `venues`.

Table 3: First 5 rows of venues dataframe

VIEWING_SPOT	VENUE	LATITUDE	LONGITUDE	DISTANCE FROM VIEWING SPOT(m)	VENUE_CATEGORY
Maruyama Park and Hokkaido Shrine	Direct Denya	43.054878	141.317871	438	Ramen Restaurant
Maruyama Park and Hokkaido Shrine	Chinese Buckwheat Spanky	43.072894	141.308704	1935	Ramen Restaurant
Maruyama Park and Hokkaido Shrine	Nishijuhatchome Station Platform 2	43.057133	141.330371	1453	Platform
Maruyama Park and Hokkaido Shrine	Ramen Sunflower	43.047194	141.332172	1854	Ramen Restaurant
Maruyama Park and Hokkaido Shrine	Ramen Sakuraka	43.057119	141.336629	1959	Ramen Restaurant

From a total of 225 venues, these were the categories returned by the **FourSquare** API near each of the recommended viewing spots:

- Ramen Restaurant
- Platform
- Train Station
- Chinese Restaurant
- Soba Restaurant

Based off the categories of the venues, it seems Ramen is sold in Chinese and Soba restaurants around each of the viewing spots as well. No matter. All the restaurants categories will be changed to `Ramen Restaurant`.

The datasets/dataframes that were used during the Analysis section are as follows:

- `viewingSpot_df`
- `venues`

3 Methodology

In this project, we looked for locations within Japan that would be able to satisfy a persons needs of enjoying the beauty of cherry blossoms and a bowl of delicious Ramen with proximity of a train station between the dates of April 15th to May 15th.

The first step was to obtain data associated with cherry blossoms average blooming dates, recommended Hanami spots, and venues around the recommended Hanami spots.

The next steps were to analyze the surrounding areas around each of the recommended viewing spots. This was done by:

- Plotted the locations of each recommended viewing spots on a map.
- Reduced the number of *extra* train station venues around a single train station through use of Hierarchical Clustering/Agglomerative Clustering.
- Generated separate maps for each recommended viewing spot with Ramen Shops and Train stations.
- Comparison of the recommended viewing spots.

A determination was made based off the criteria set during the introduction section.

4 Analysis

4.1 Recommended Viewing Spots on Map

The analysis began by plotting the recommended viewing spots onto a map of Japan.

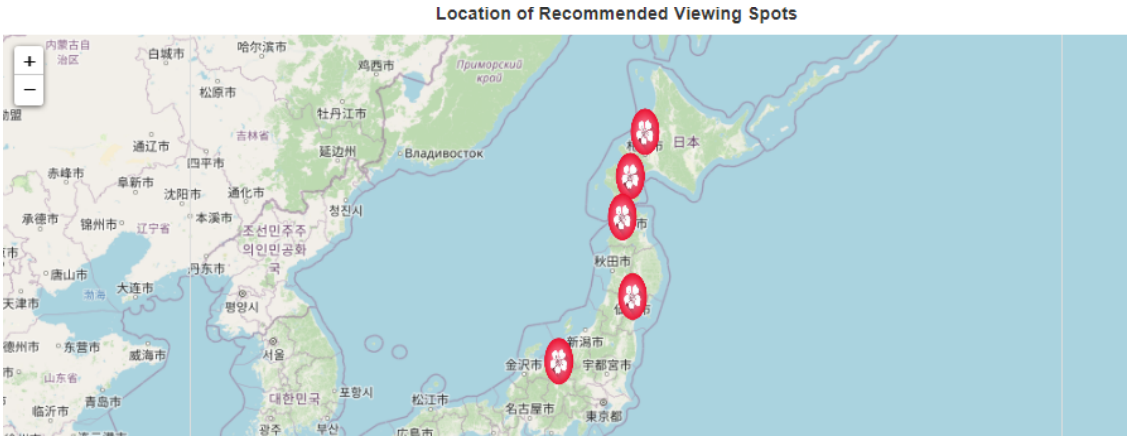

Figure 1: From South to North: Matsumoto Castle, Mikamine Park, Hirosaki Castle, Goryokaku Fort, Maruyama Park and Hokkaido Shrine

The recommended viewing spots are all located in the northern regions of Japan. This is not surprising due to the time of Hanami season we are focusing on. The cherry blossom front travels from south to north, with the start of Hanami season occurring in the southern regions of Japan around late March and the end of the season occurring in late May in the northern regions of Japan.

4.2 Clustering Train Stations : Hierarchical Clustering

When reviewing the venues dataframe, it was found there were multiple `Train Station` and `Platform` venues, for a single train station. An example of this is shown on Figure 2 for the Goryokaku Station near Goryokaku Fort.

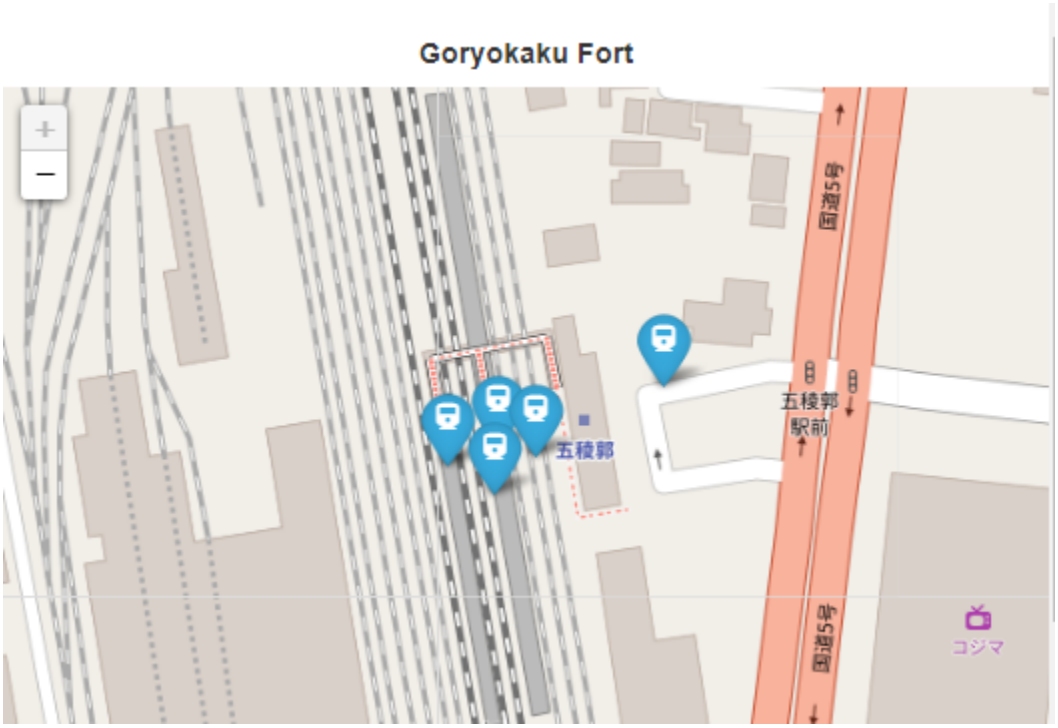

Figure 2: Example of multiple Train Station and Platform venues around one Train Station.

We want there to be only one set of coordinates per train station. We could pick the points visually to condense into one point per venue, but let's accomplish this through use of hierarchical clustering.

The process which was taken to determine the number of clusters for the excess coordinates around each train station was:

- All `Train Station` and `Platform` points were identified.
- Dendograms were created for each of the recommended viewing spots.
- Number of clusters was determined from the dendograms by use of a threshold line. This line was drawn from the euclidean distance of 0.002, which is ~200 meters (~0.12 miles) from next point.
- The number of times the threshold line crosses a horizontal line determines the number of clusters.

4.2.1 Dendograms

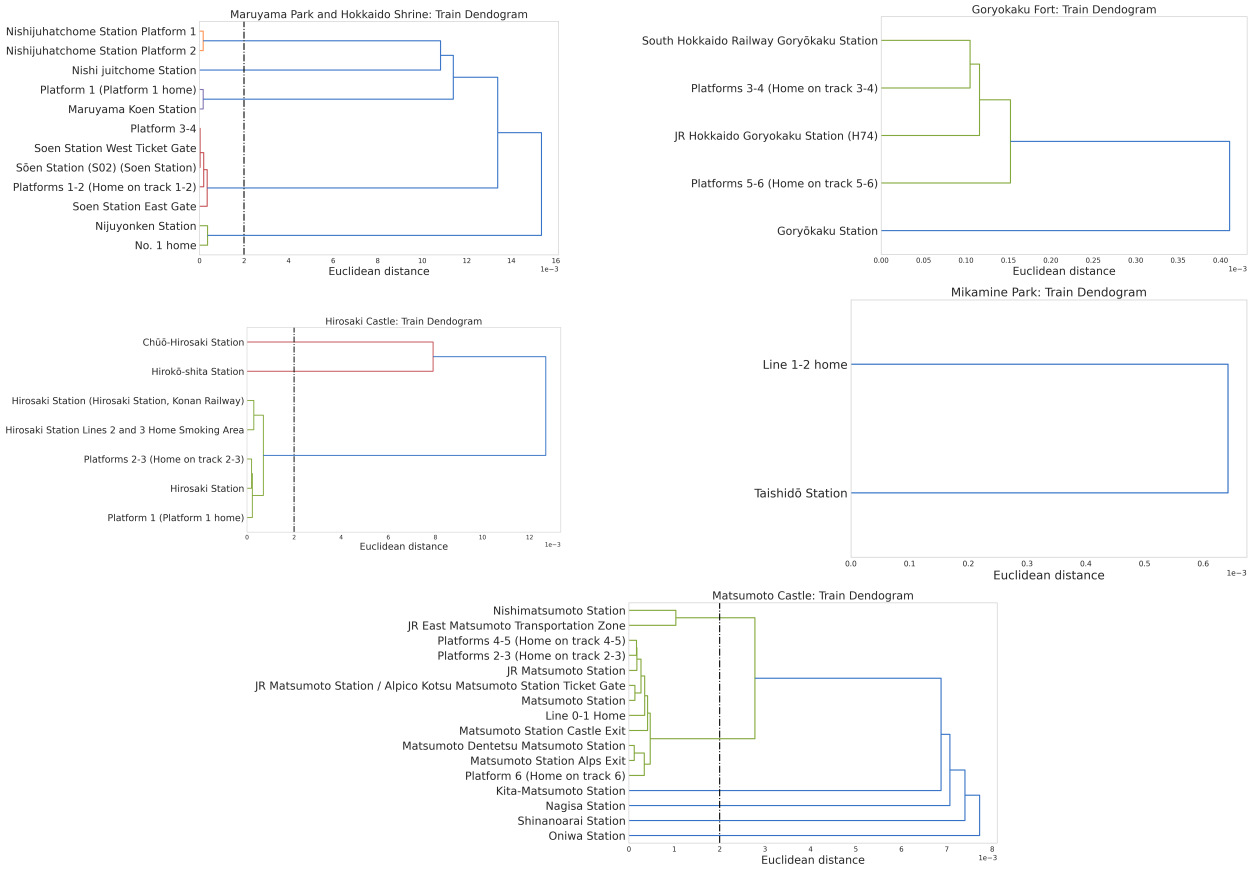

Figure 3: Dendograms for train locations around each of the Recommended Viewing Spots.

We were looking to create clusters with a euclidean distance of at least `0.002` (~ 200meters / ~0.12 miles). The distance between the points at `Goryokaku Fort` and `Mikamine Park` are relatively small compared to the other three locations. It is for this reason those points in those areas will be one cluster.

- Maruyama Park and Hokkaido Shrine : 5 clusters
- Goryokaku Fort : 1 cluster
- Hirosaki Castle : 3 clusters
- Mikamine Park : 1 cluster
- Matsumoto Castle : 6 clusters

4.2.2 Agglomerative Clustering

With the number of clusters determined through the use of dendograms, the excess number of train station venue coordinates are clustered together with those in close vicinity of one another for each of the recommended viewing spots.

The train station and Platform venues will be plotted. Those belonging to the same cluster are assigned the same color and label based off their cluster.

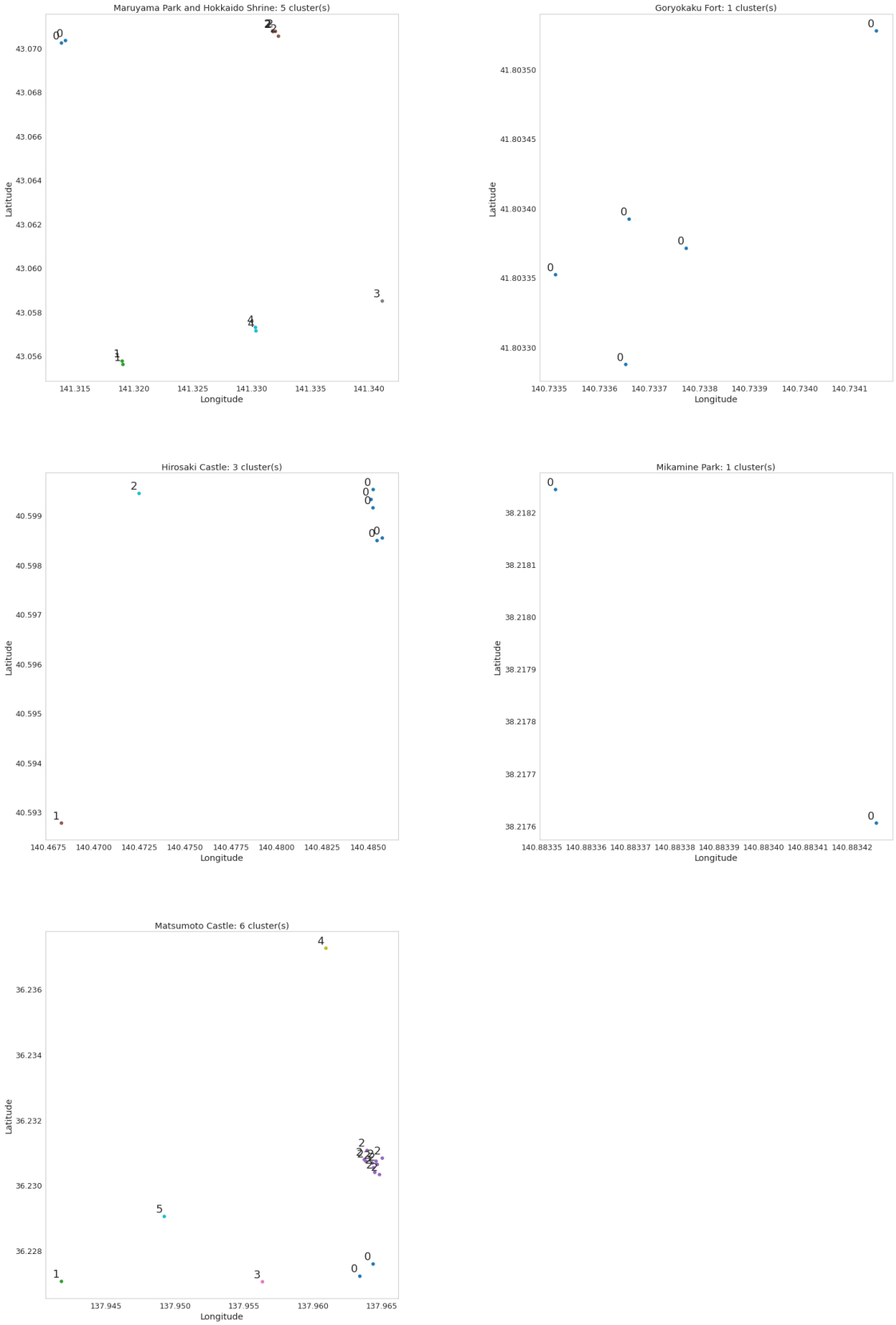

Figure 4: Agglomerative Clustering: Train Clusters for each of the recommended viewing spots.

These clusters were used to reduce the number of excess train station and platform points around a single train station venue.

```
Original Number of Train Stations: 42.
Current Number of Train Stations: 16.
```

4.2.3 Summary of Clustering

42 `Train Station` and `Platform` points were reduced to 16 `Train Station` points across the 5 recommended viewing spot areas.

With all the extra train station coordinates reduced around each of the viewing spots, the `venues` dataframe was updated to with the new train station information while removing the old information.

4.3 Plot venues around Recommended Viewing Spots

Plotting all the venues around each the viewing spots. Restaurants will be indicated by a cutlery icon, while train stations will be indicated by a train icon. On each map a circle with a radius of 1.25 miles is centered on the recommended viewing spot.

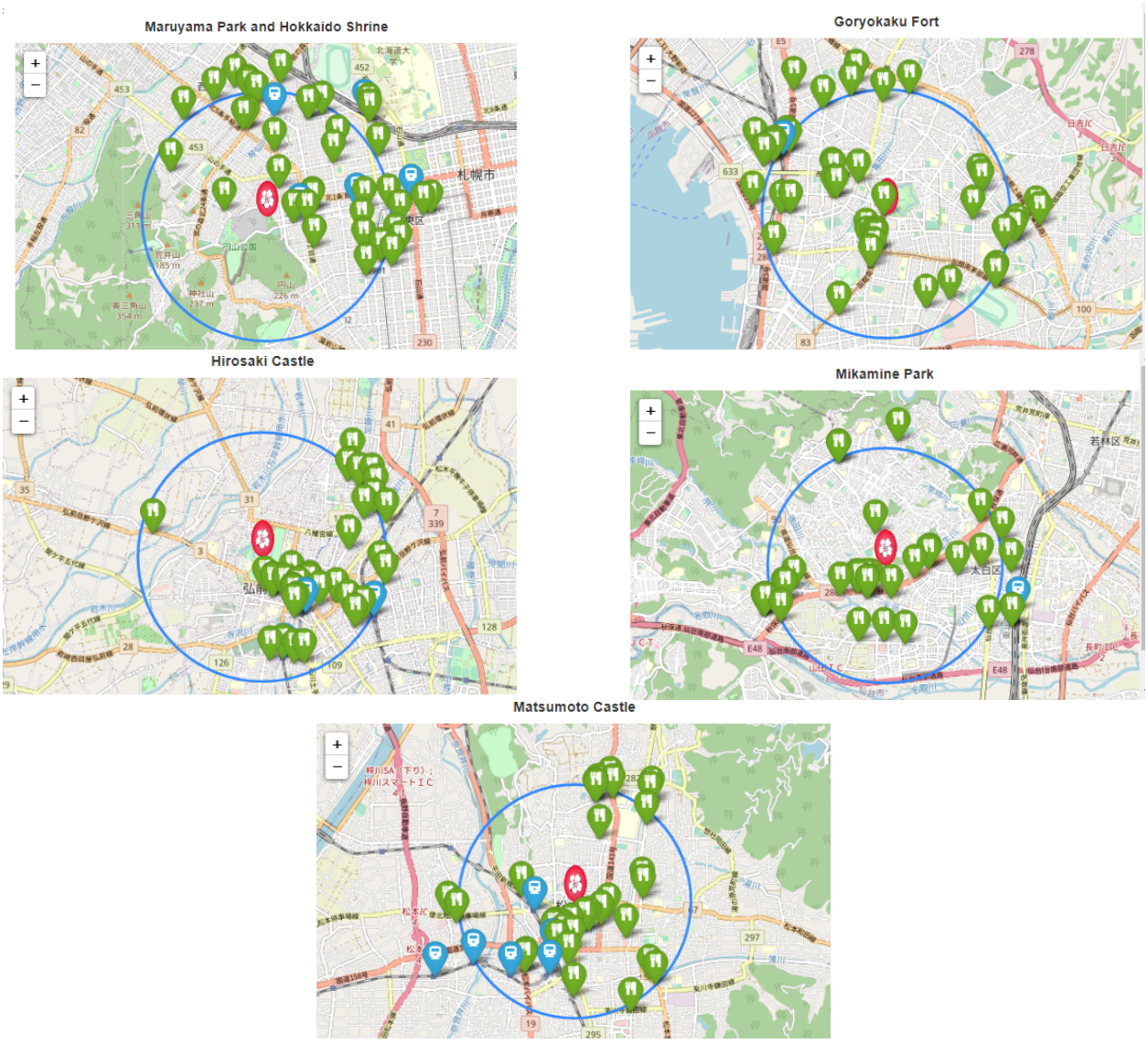

Figure 5: Dendograms for train locations around each of the Recommended Viewing Spots.

4.4 Comparing the Recommended Viewing Spots

Let's group rows by Viewing Spot and by taking the mean of the frequency of occurrence of each category

Table 4: Frequency of Occurrence of each Category

VIEWING_SPOT	Ramen Restaurant	Train Station
Goryokaku Fort	0.976744	0.023256
Hirosaki Castle	0.923077	0.076923
Maruyama Park and Hokkaido Shrine	0.883721	0.116279
Matsumoto Castle	0.850000	0.150000
Mikamine Park	0.970588	0.029412

Not very informative due to only two types of venues.

Let's look at how each of the viewing spots compare to one another in regards to Ramen Restaurants and Train Stations.

We will do this through the use of a bar charts.

First, let's see how the number of Ramen Restaurants and Train Stations compare.

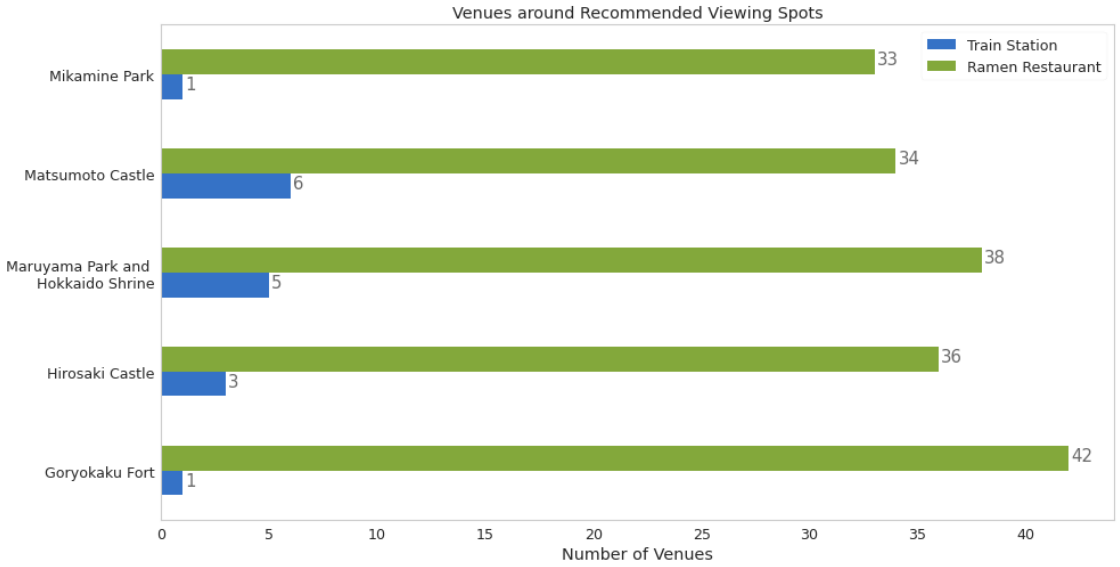

Figure 6

Next, let's see the average distance to Ramen Restaurants and Train Stations.

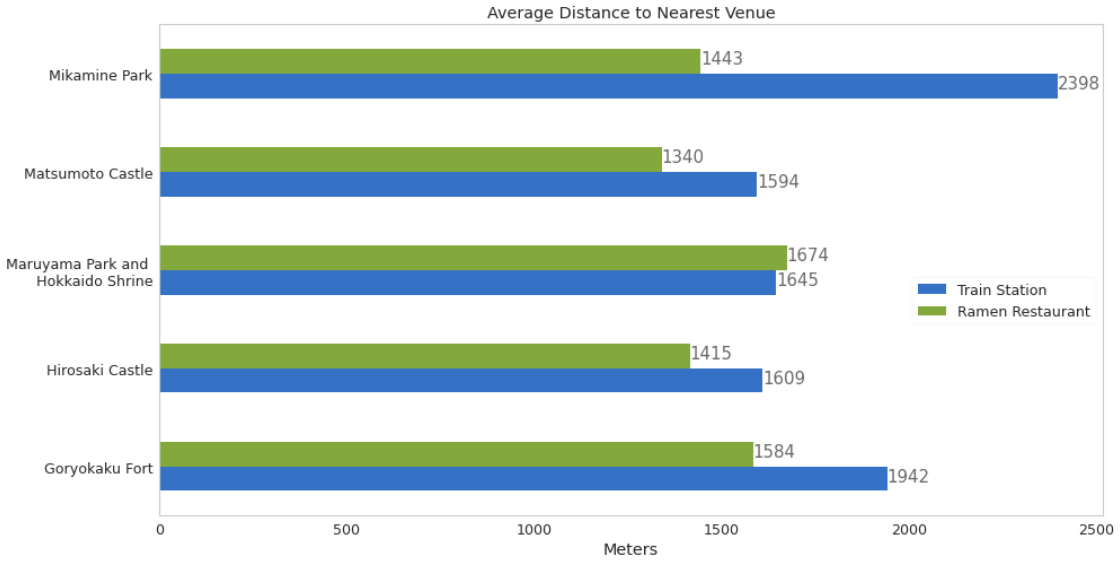

Figure 7

5 Results and Discussion

From the many Hanami spots across Japan, five Hanami spots (Mikamine Park, Matsumoto Castle, Maruyama Park and Hokkaido Shrine, Hirosaki Castle, and Goryokaku Fort) were selected based off average cherry blossoming time occurring between April 15th - May 15th and based off recommendations from https://www.japan-guide.com/e/e2011_where.html. Our analysis of these five recommended Hanami spots showed there are a quite a number of Ramen Shops/Restaurants and at least one train station around each location.

Now, how can we determine which of the five recommended Hanami Spots should be selected as the *best*. The criteria that will be used are: 1) Ramen shops located close to the recommended Hanami spots and 2) Proximity to a train station.

1) Ramen Shops

   We can quickly compare the number of Ramen Shops between each of the five Hanami Spots by looking at Figure 6. Based off number of Ramen shops alone, Goryokaku Fort is the *best* of the recommended Hanami Spots with 42 Ramen Shops and Mikamine Park is the *worst* with only 33 Ramen Shops within a 1.25 mile radius.

   Furthermore looking at Figure 7, the *best* Hanami Spot would be Matsumoto Castle with a Ramen Shop located within an average distance of 1340 meters (~0.83 miles) and the *worst* location would be Maruyama Park and Hokkaido Shrine with a Ramen Shop located within an average distance of 1674 meters (~1.04 miles).

2) Train Stations

   Chart B indicates Matsumoto Castle would be the *best* location to enjoy Hanami and grab a train due to the average distance to a train station is 1594 meters with six train stations in the area. While Mikamine Park is the *worst* with an average distance of 2398 meters with only the one train station in the area.

Another criterion to select the *best* Hanami spot is to use the rating system found at https://www.japan-guide.com/e/e2011_where.html. The rating for each of the recommended Hanami spots were also scraped from the site and can be found within the `viewingSpot_df` dataset. The ratings range from 1 to 3 where the numbers represent the following:

1) Recommended
2) Highly Recommended
3) Best of Japan

Table 5: Recommended Viewing Spots Sorted by Rating

VIEWING_SPOT	CITY	PREFECTURE	REGION	LATITUDE	LONGITUDE	RATING	RATING_DESCRIPTION
Hirosaki Castle	Hirosaki	Aomori	Tohoku	40.607452	140.464180	3	Best of Japan
Goryokaku Fort	Hakodate	Hokkaido	Hokkaido	41.794670	140.754020	2	Highly Recommended
Matsumoto Castle	Matsumoto	Nagano	Chubu	36.238653	137.968867	2	Highly Recommended
Maruyama Park and Hokkaido Shrine	Sapporo	Hokkaido	Hokkaido	43.055745	141.312607	1	Recommended
Mikamine Park	Sendai	Miyagi	Tohoku	38.224822	140.857414	1	Recommended

Based off the rating system, Hirosaki Castle is the best Hanami Spot from the bunch to visit. Not only is it considered a *Best of Japan* location, it has 36 Ramen Shops within an average distance of

1415 meters (~ 0.88 miles) and 3 Trains stations within an average distance of ~1609 meters (~ 1.0 mile).

6 Conclusion

In this project, we identified some of the best locations in Japan in which to enjoy both Hanami and Ramen from April 15th to May 15th. We found recommended Hanami spots which could be traveled to easily based on the proximity of train stations and also found that each of the spots have a good variety of choices for Ramen.

We also were able to cluster multiple coordinates together for a single train station based off their proximity to one another through the use of Hierarchical clustering. The ability to quickly compare the number of venues around each of the recommended Hanami Spots was accomplished through the use of bar charts.

Overall, there are many different locations a person can visit to enjoy springtime and the cherry blossoms in Japan. The biggest factor to keep in mind is the when. With cherry blossoms lasting a short time span and the cherry blossom front traveling from south to north, a person needs to keep the time of spring season in mind when planning a trip to Japan to experience the tradition of Hanami.