A picture containing tree, outdoor, sky, house

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Highly Favorable Restaurants in Charleston, South Carolina

Caleb White

Coursera Capstone Assignment

# The Report

## Highly Favorable Restaurants in Charleston, South Carolina

### Introduction

#### Background

Charleston is filled with beautiful cobblestone walkways, stunning historical monuments, and some of the best restaurants in the world. Furthermore, Charleston has some of the best beaches in the United States of America along with natives who present great southern hospitality. Due to this, Charleston is growing exponentially. New individuals are coming to Charleston every day and because of this, building new restaurants is a great opportunity for anyone interested in doing so. A hypothetical example will be used concerning a client who has requested consultation in opening a new restaurant in Charleston County. The data will be evaluated to see which restaurants in the Charleston area are the most favorable, have the most optimal location, and what food items would be the best sellers for the client. A dataset of South Carolina’s geographical coordinates as well as the Foursquare API are used to give the most significant results.

#### Client Being Consulted

The client wants to open a new restaurant in Charleston County, South Carolina, but is wanting consultation on the most optimal location and which type of restaurant will bring the most customers as well as the most popular food items they should sell.

### Data

#### Overview

The geographical coordinates (latitude and longitude) of Charleston County were retrieved. Next, a list of all restaurant in Charleston County were gathered. Third, the Foursquare API was used to get the Venue Identification for all the different restaurants. Finally, using the Foursquare API, data consisting of each of the restaurants menus and ratings were gathered.

#### Requirements and Descriptions

|  |  |  |
| --- | --- | --- |
| Data | Description | Acquired |
| City | Give the location of Charleston City | South Carolina JSON file scraped from opendatasoft.com |
| County | Locate the position of Charleston County | South Carolina JSON filer scraped from opendatasoft.com |
| Latitude | Find the Latitude of cities in Charleston County | South Carolina JSON file scraped from opendatasoft.com |
| Longitude | Find the Longitude of cities in Charleston County | South Carolina JSON file scraped from opendatasoft.com |
| Venue Name | The best-known name for the venues | Foursquare API – GET Venues Explore |
| Venue ID | A unique string identifier for the venues | Foursquare API – GET Venues Explore |
| Venue Location | An object containing the city, postal code, latitude, and longitude | Foursquare API – GET Venues Explore |
| Venue Categories | An array of categories that have been applied to the venues | Foursquare API – GET Venues Explore |
| Venue Likes | Contains count and groups of users who like the venues | Foursquare API – GET Venues Likes |
| Venue Name | A name for the menus | Premium Foursquare API – GET Venues Menu |
| Venue MenuID | A unique string identifier for the menus | Premium Foursquare API – GET Venues Menu |
| Venue Description | More information describing the menus | Premium Foursquare API – GET Venues Menu |
| Venue Entries | Contains the Name, SectionID, and Entries for each menu item | Premium Foursquare API – GET Venues Menu |

### Methodology

#### Methodology Requirements

An exploratory data analysis will be used to analyze the multivariate data set to find the primary characteristics and then visualize those characteristics. Also, a clustering method will be used to identify groups of similar objects in the geo-spatial data set.

#### Analysis

The first step will be to download the South Carolina dataset and assign the dataset to a data frame. Next, the cities of Charleston County will be counted by filtering the counties with the key word ‘Charleston’. The number of counties in South Carolina is 376. The number of cities with different postal codes named Charleston is sixteen. A picture containing text, newspaper

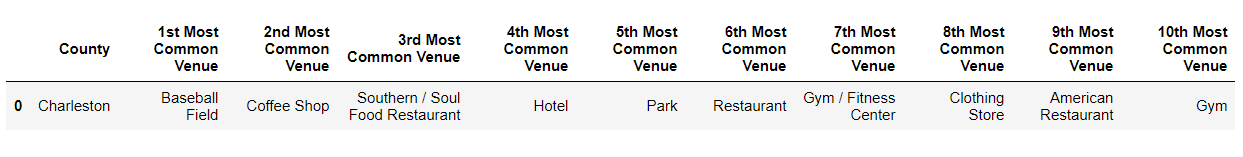
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The next step will be to get the venue name, latitude, longitude, identification number, and category from the Foursquare API. Then, the number of venues in the County must be counted. Next, a one-hot table should be generated, and the statistical mean of the county should be calculated. A frequency analysis of each category should be created for the county. The resulting table looks like this:

Text

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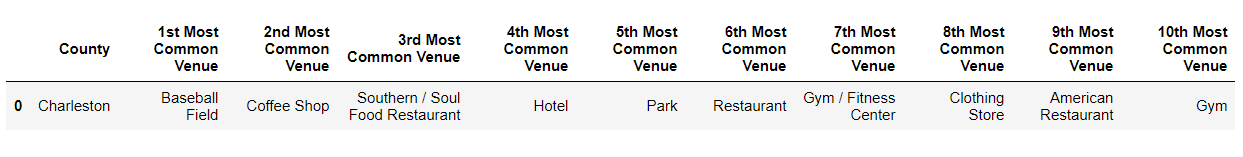
From looking at this table, one may assume the frequency of the county is respective of other large counties, however, the frequency of these categories in Charleston is rather high. Lastly, the venues should be sorted to get the ten most common venues in the county based on K-Means Method.



All the information should then be collected and filtered from the restaurants that is needed. The Foursquare API should be called using the Venue ID of the restaurants to return the data of likes and menus.

### Results

#### K-Means



#### Popularity Index

The number of likes was requested using the Foursquare API to get the popularity index. However, not all restaurants were able to provide such information.

Table

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The count of likes for all these restaurants combined is 543.

#### Menu

Graphical user interface, text, application

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### Discussion

According to the results, Foursquare only allowed us access to thirty restaurants in Charleston, as listed above. So, the optimal location would need to be somewhere in Charleston within a radius of 1000 meters. However, from the frequency analysis, the restaurants here appear to be mainly Southern / Soul Food and American Food. These food choices may be the wisest option. The results of the popularity analysis seem to show that the thirty restaurants listed are also popular in Charleston. Furthermore, it may be wise to choose a coffee shop as those also seem to be popular here with Starbucks holding almost one-third of the coffee shops in Charleston.

### Conclusion

Limits were placed on the data being accessed; therefore, a smaller sample size was used for the targeted problem. This, in turn, caused variation and inaccuracy in the results. Future research should test more cities in Charleston County and retrieve more likes and menu items than the present research was able to obtain. Lastly, deep learning methods could also be put into play to analyze the textual descriptions of the menu items to retrieve useful and significant information.