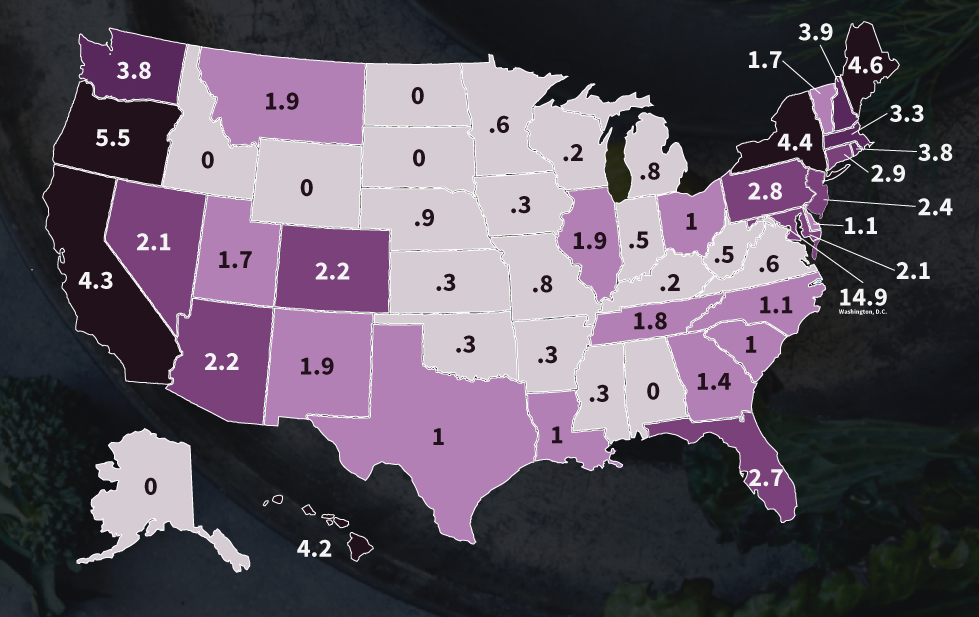
**Report: Place open a vegetarian restaurant in Manhattan**

**Introduction**

Into the 21 Century, vegetarianism is still one of the most important trends to to study for Public Health and Food industry.  
Surveys in the U.S. have found that roughly 1–2.8 percent of adults eat no meat, poultry, or fish.  
In 2013, PS 244 in Queens became the first public school in New York to adopt an all-vegetarian menu. Meals still meet the required USDA protein standards.

The following map give show states with their Vegan population.



**We can see New York is one of the top states with large vegetarian population.**

While most restaurants offer some vegetarian dishes, many vegetarians still prefer pure vegetarian restaurants.

* They trust the food being prepared in pure vegetarian restaurants.
* They enjoy the environment of pure vegetarian restaurants

So it is still important to open more vegetarian restaurants, especially in neighborhoods where vegetarian restaurants are hard to access.

In this project, we will study Manhattan neighborhoods and recommend a best place to open a new vegetarian restaurant.

**Data**

We will use New York neighborhood data

Source: https://cocl.us/new\_york\_dataset

We will use folium.Map tool and the geometric map data comes with it.

We will need Manhattan neighborhoods venue data

We only interested the venue in ‘Food” category.

Among those venues, we most interested in “restaurant”, “vegetarian” subcategories.

Source: FourSquare.com

**Methodology**

From Manhattan neighborhoods data, we process and get:

Neighborhoods:

Name

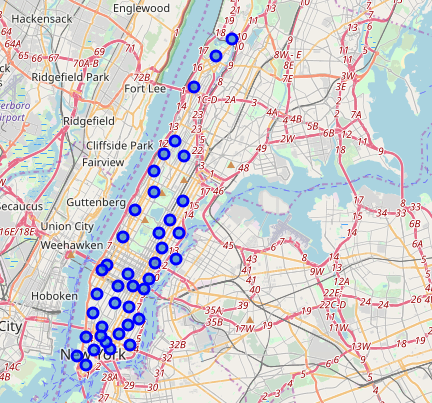
Latitude

Longitude

We also calculate:

Distances between centers of any two neighborhoods

Radius of from neighborhoods centers where venues need to be studied



From FourSquare.com data, we process and get

For each neighborhoods:

Number of restaurants accessible

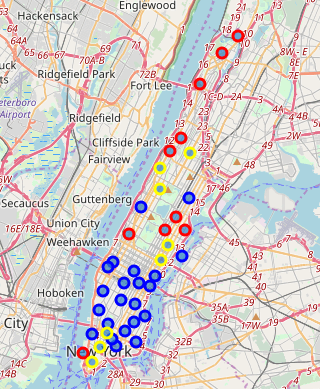
Number of vegetarian restaurants accessible

Classify neighborhoods in terms of vegetarian restaurants resource vs total number of restaurants:

**Sufficient**, **Some**, **Lack**

For those neighborhoods lacking vegetarian restaurants resource, we calculate:

Access distance to nearby neighborhoods which has vegetarian resource.



Decision method

Number of total restaurant reflects demanding of the restaurant business.

Number of vegetarian restaurant reflects business opportunity.

The **Sufficient**, **Some**, **Lack** captures the above to factors.

Additional consideration:

If a neighborhood is marked as ‘Lack’, we also consider the distance to its nearby neighborhoods which has vegetarian resources.

**For more details of the methodology, please see notebook:**

<https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/0dca9b3d-6ff2-48de-8489-1c7da16f34f8/view?access_token=4384236afa11f2bb2ab302520c201cb873c5041fee15ee4ee93223b32e86e03d>

and

<https://gist.github.com/jjdawu/2a9ed0064214dd705ce13063a808c594>

**Result**

We process and get for each neighborhood:

Name

Location (latitude and longitude)

Number of total restaurants

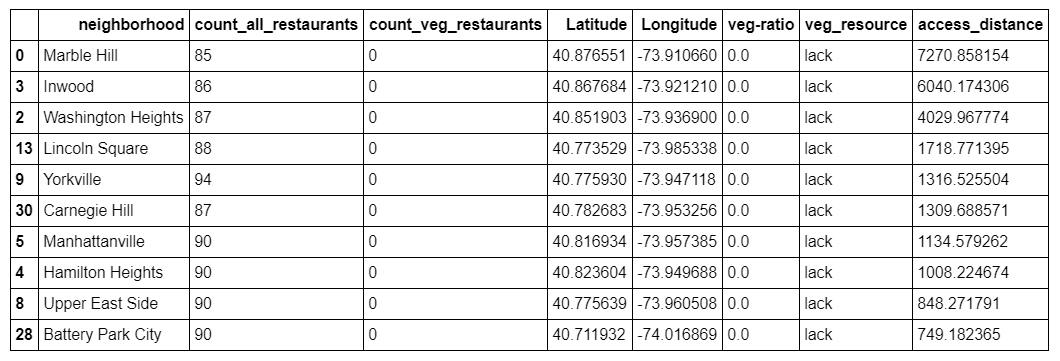
Number of vegetarian restaurants

Ratio

Classification

Access distance to nearby neighborhood which has vegetarian restaurants.

The following table list only those in ‘Lack’ class (sorted by access distance):



**Discussion**

All neighborhoods listed in the above table have the following properties:

Have many restaurants. (this is turns out to be the case for all Manhattan neighborhoods.)

No vegetarian restaurants

Access distance to nearby neighborhoods which has vegetarian restaurants varies.

All of them are good candidates for opening a new vegetarian restaurant.

But more urgently needed are those listed on the top of the table, because they are far away from the neighborhoods where have vegetarian restaurants.

Note: we did not consider the boundary effect. That is we did not study the non-Manhattan regions surrounding Manhattan. This is not a big problem since Manhattan are surrounded by water in three sides and less-dense populated area on North.

**Conclusion**

Neighborhood Marble Hill has no vegetarian restaurant, it also longest distant to access nearby vegetarian restaurants.

We recommend the following neighborhood to be the top candidate for new vegetarian restaurant.

### Top Candidate: Marble Hill

### For other possible neighborhoods to open an vegetarian restaurant, please see map and table above.

### [¶](https://dataplatform.cloud.ibm.com/data/jupyter2/runtimeenv2/v1/wdpx/service/notebook/conda2py36891327a1958b497980e23c7d884407fc/dsxjpy/8e7YpSrD78uZ3gFUAjA7Qg:ba3y2jULB6CWq32Tub9y2muPrVZPW3sth_cFw6Bqw8YX9Wg_YOYqL3Obf6275VMZNWXBfQM/container/notebooks/0dca9b3d-6ff2-48de-8489-1c7da16f34f8?api=v2&project=891327a1-958b-4979-80e2-3c7d884407fc#Sort-neighborhoods-by-latitude)