

# BATTLE2

May 29, 2019

## Description

As we plan to open a San Francisco restaurant and assume we will rent a place. I couldn't get information about renting all neighborhoods in this dataset. We only need to analyze the current rent range for this project.

```
In [1]: import pandas as pd
import numpy as np
url='https://raw.githubusercontent.com/skybullet1987/BATTLE1/master/dataset.csv'
readfile = pd.read_csv(url)
readfile.head()
```

```
Out[1]:  NeighborhoodName      City State  CountyName  2019-1  2019-2 \
0  Mission District  San Francisco  CA  San Francisco   3300   3250
1      Downtown  San Francisco  CA  San Francisco   2900   3010
2  Pacific Heights  San Francisco  CA  San Francisco   3600   3620
3      Nob Hill  San Francisco  CA  San Francisco   2902   2803
4  South of Market  San Francisco  CA  San Francisco   3620   3810

      2019-3  2019-04  2019-05  2019-06
0    3295    3500    3495    3450
1    3100    3050    3105    3150
2    3610    3705    3723    3751
3    2850    2841    2863    2796
4    3830    3796    3754    3750
```

I only planned to test the data I had collected.

To find out which neighborhood is good to open a new restaurant, I will use a formula. Before I came up with a formula, I was wondering what all of the attributes / factors we can consider because it is really unfair to compare data from restaurant 10 years old with restaurant 1 year old.

Like for example, the 10-year-old restaurant's checkin count will be more compared to a 1-year-old or 6-month-old restaurant. And I also found, after analyzing data, that the number of checkins in many restaurants is zero. I thought it would be really helpful to figure out the number of crowds visiting a specific neighborhood, but I avoided it because of data discrepancy.

Then I concluded that there would definitely be ratings for every restaurant. Even if 100 customers have visited a restaurant that is 1 year old, the rating will be 5 stars, and the same applies to a restaurant that is 10 years old.

Below is the formula for the solution.  $\text{finalScore} = (\text{rentScore})0.5 + (\text{ratingScore})0.5$

Closer the finalScore to 1, better neighborhood choice for the customer to decide. I rented more weights than ratings. Let's see the significance of is RentScore and RatingScore.

RentScore can be calculated by  $(\text{maxrentneighborhood})/(\text{maxrentneighborhood}-\text{minrentneighborhood})$ . RentScore value can be obtained from the above rental dataset for each neighborhood.

RatingScore can be calculated by  $(\text{maxred-restored})/(\text{maxred}-\text{minred})$ . Using foursquare location, ratingScore can be obtained. The steps to obtain ratingScore are below.

To analyze and obtain more information about other restaurants, we need the neighborhood coordinates. By passing the NeighborhoodName value through geocoding, you can obtain coordinates or latitude & longitude. Let's import the package and find second neighborhood coordinates from the rental dataset above.

```
In [2]: !conda install -c conda-forge geopy --yes
        from geopy.geocoders import Nominatim
```

Collecting package metadata: done

Solving environment: |

The environment is inconsistent, please check the package plan carefully

The following packages are causing the inconsistency:

```
- defaults/linux-64::anaconda==5.3.1=py37_0
- defaults/linux-64::astropy==3.0.4=py37h14c3975_0
- defaults/linux-64::bkcharts==0.2=py37_0
- defaults/linux-64::blaze==0.11.3=py37_0
- defaults/linux-64::bokeh==0.13.0=py37_0
- defaults/linux-64::bottleneck==1.2.1=py37h035aef0_1
- defaults/linux-64::dask==0.19.1=py37_0
- defaults/linux-64::datashape==0.5.4=py37_1
- defaults/linux-64::mkl-service==1.1.2=py37h90e4bf4_5
- defaults/linux-64::numba==0.39.0=py37h04863e7_0
- defaults/linux-64::numexpr==2.6.8=py37hd89afb7_0
- defaults/linux-64::odo==0.5.1=py37_0
- defaults/linux-64::pytables==3.4.4=py37ha205bf6_0
- defaults/linux-64::pytest-arraydiff==0.2=py37h39e3cac_0
- defaults/linux-64::pytest-astropy==0.4.0=py37_0
- defaults/linux-64::pytest-doctestplus==0.1.3=py37_0
- defaults/linux-64::pywavelets==1.0.0=py37hdd07704_0
- defaults/linux-64::scikit-image==0.14.0=py37hf484d3e_1
done
```

```
## Package Plan ##
```

environment location: /home/jupyterlab/conda

added / updated specs:

```
- geopy
```

The following packages will be downloaded:

package	build	
geographiclib-1.49	py_0	32 KB conda-forge
geopy-1.20.0	py_0	57 KB conda-forge
Total:		90 KB

The following NEW packages will be INSTALLED:

geographiclib conda-forge/noarch::geographiclib-1.49-py\_0

The following packages will be UPDATED:

geopy conda-forge/linux-64::geopy-1.11.0-py~ --> conda-forge/noarch::geopy-1.20.0-py\_0

Downloading and Extracting Packages

```
geopy-1.20.0      | 57 KB    | ##### | 100%
geographiclib-1.49 | 32 KB    | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
```

In [4]: address = 'Downtown, San Francisco, CA'

```
geolocator = Nominatim()
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('Latitude and longitude of '+address+' are {}, {}'.format(latitude, longitude))
```

/home/jupyterlab/conda/lib/python3.6/site-packages/ipykernel\_launcher.py:2: DeprecationWarning: Using Nominatim

Latitude and longitude of Downtown, San Francisco, CA are 37.7875138, -122.407159.

address = 'Downtown, San Francisco, CA' geolocator = Nominatim() location = geolocator.geocode(address) latitude = location.latitude longitude = location.longitude print('Latitude and longitude of '+address+' are {}, {}'.format(latitude, longitude))

Now once we got the neighborhood's latitude and longitude, let's use Foursquare Location to get the Mission District Neighborhood's all restaurant details. The restaurant details can be retrieved using search endpoint.

We only need Russian restaurant data for our project, and in search endpoint there is an attribute called category I d, i.e. foursquare has a defined categoryid for each category (like Russian or Ukranian or georgian restaurant) that will help us get the desired data.

```
In [5]: CLIENT_ID = 'IZYIHS5CH11SQSDVLQ0SPHMZOJUAGKZWBSedNLJP4CCEKH4W' # your Foursquare
CLIENT_SECRET = '0NI2OCB1CRFX02GUZ3ZLQEQJ3MSBMNN2NPVHM2T2ZFKAZG0L' # your Foursquare
VERSION = '20180604'
LIMIT = 30
print('Your credentials:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)
```

Your credentials:

```
CLIENT_ID: IZYIHS5CH11SQSDVLQ0SPHMZOJUAGKZWBSedNLJP4CCEKH4W
CLIENT_SECRET: 0NI2OCB1CRFX02GUZ3ZLQEQJ3MSBMNN2NPVHM2T2ZFKAZG0L
```

```
In [6]: categoryId= '5293a7563cf9994f4e043a44' #categoryID for Russiann restaurant.
radius=1000 # radius in meters
```

```
In [28]: url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&
CLIENT_ID,
CLIENT_SECRET,
VERSION,
latitude,
longitude,
radius,
LIMIT,
categoryId)
```

In [29]: #Send the GET request and examine the results

```
import requests
results = requests.get(url).json()
results
```

```
Out[29]: {'meta': {'code': 200, 'requestId': '5cedfe904c1f6753b3705a3f'},
'response': {'suggestedFilters': {'header': 'Tap to show:',
'filters': [{'name': 'Open now', 'key': 'openNow'}]},
'headerLocation': 'Downtown San Francisco-Union Square',
'headerFullLocation': 'Downtown San Francisco-Union Square, San Francisco',
'headerLocationGranularity': 'neighborhood',
'query': 'russian',
'totalResults': 8,
'suggestedBounds': {'ne': {'lat': 37.79651380900001,
'lng': -122.39579200648618},
'sw': {'lat': 37.77851379099999, 'lng': -122.41852599351381}},
'groups': [{'type': 'Recommended Places',
'name': 'recommended',
'items': [{'reasons': {'count': 0,
'items': [{'summary': 'This spot is popular',
'type': 'general',
```

```

    'reasonName': 'globalInteractionReason'}}},
'venuue': {'id': '58cc4d2fe0adac17bbf4838e',
'name': 'Pushkin',
'location': {'address': '380 Bush St',
'crossStreet': 'at Kearny St',
'lat': 37.79094301071348,
'lng': -122.40387738626474,
'labeledLatLngs': [{'label': 'display',
'lat': 37.79094301071348,
'lng': -122.40387738626474}],
'distance': 478,
'postalCode': '94104',
'cc': 'US',
'city': 'San Francisco',
'state': 'CA',
'country': 'United States',
'formattedAddress': ['380 Bush St (at Kearny St)',
'San Francisco, CA 94104',
'United States']},
'categories': [{'id': '5293a7563cf9994f4e043a44',
'name': 'Russian Restaurant',
'pluralName': 'Russian Restaurants',
'shortName': 'Russian',
'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/russian_',
'suffix': '.png'},
'primary': True}],
'photos': {'count': 0, 'groups': []}},
'referralId': 'e-0-58cc4d2fe0adac17bbf4838e-0'},
{'reasons': {'count': 0,
'items': [{'summary': 'This spot is popular',
'type': 'general',
'reasonName': 'globalInteractionReason'}}},
'venuue': {'id': '45e86d76f964a5206a431fe3',
'name': 'Samovar Tea Lounge',
'location': {'address': '730 Howard St',
'crossStreet': 'btwn 3rd & 4th St',
'lat': 37.784252511908036,
'lng': -122.40217926245396,
'labeledLatLngs': [{'label': 'display',
'lat': 37.784252511908036,
'lng': -122.40217926245396}],
'distance': 568,
'postalCode': '94103',
'cc': 'US',
'neighborhood': 'SoMa',
'city': 'San Francisco',
'state': 'CA',
'country': 'United States',

```

```

    'formattedAddress': ['730 Howard St (btwn 3rd & 4th St)',
      'San Francisco, CA 94103',
      'United States']],
    'categories': [{ 'id': '4bf58dd8d48988d1dc931735',
      'name': 'Tea Room',
      'pluralName': 'Tea Rooms',
      'shortName': 'Tea Room',
      'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/tearoom_',
        'suffix': '.png' },
      'primary': True }],
    'photos': { 'count': 0, 'groups': [] },
    'referralId': 'e-0-45e86d76f964a5206a431fe3-1',
    { 'reasons': { 'count': 0,
      'items': [{ 'summary': 'This spot is popular',
        'type': 'general',
        'reasonName': 'globalInteractionReason' } ] },
    'venue': { 'id': '408aff80f964a520c1f21ee3',
      'name': 'Tunnel Top',
      'location': { 'address': '601 Bush St',
        'crossStreet': 'at Stockton St',
        'lat': 37.790278000572236,
        'lng': -122.4072361885583,
        'labeledLatLngs': [ { 'label': 'display',
          'lat': 37.790278000572236,
          'lng': -122.4072361885583 } ],
        'distance': 307,
        'postalCode': '94108',
        'cc': 'US',
        'city': 'San Francisco',
        'state': 'CA',
        'country': 'United States',
        'formattedAddress': ['601 Bush St (at Stockton St)',
          'San Francisco, CA 94108',
          'United States' ] },
      'categories': [ { 'id': '4bf58dd8d48988d116941735',
        'name': 'Bar',
        'pluralName': 'Bars',
        'shortName': 'Bar',
        'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/nightlife/pub_',
          'suffix': '.png' },
        'primary': True } ],
      'photos': { 'count': 0, 'groups': [] },
      'venuePage': { 'id': '117394452' } },
    'referralId': 'e-0-408aff80f964a520c1f21ee3-2',
    { 'reasons': { 'count': 0,
      'items': [{ 'summary': 'This spot is popular',
        'type': 'general',
        'reasonName': 'globalInteractionReason' } ] },

```

```

'venue': {'id': '52faed3c11d2a28ddfef150f',
'name': 'Hopwater Distribution',
'location': {'address': '850 Bush St',
'lat': 37.789927637673124,
'lng': -122.41131669050196,
'labeledLatLngs': [{'label': 'display',
'lat': 37.789927637673124,
'lng': -122.41131669050196}]},
'distance': 453,
'postalCode': '94108',
'cc': 'US',
'city': 'San Francisco',
'state': 'CA',
'country': 'United States',
'formattedAddress': ['850 Bush St',
'San Francisco, CA 94108',
'United States']},
'categories': [{'id': '56aa371ce4b08b9a8d57356c',
'name': 'Beer Bar',
'pluralName': 'Beer Bars',
'shortName': 'Beer Bar',
'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/nightlife/pub_',
'suffix': '.png'},
'primary': True}],
'photos': {'count': 0, 'groups': []},
'referralId': 'e-0-52faed3c11d2a28ddfef150f-3'},
{'reasons': {'count': 0,
'items': [{'summary': 'This spot is popular',
'type': 'general',
'reasonName': 'globalInteractionReason'}]},
'venue': {'id': '4686529ff964a5203b481fe3',
'name': 'Sutter Station',
'location': {'address': '554 Market St',
'crossStreet': 'btw 2nd St & Sutter St',
'lat': 37.7899599,
'lng': -122.4009151,
'labeledLatLngs': [{'label': 'display',
'lat': 37.7899599,
'lng': -122.4009151}]},
'distance': 613,
'postalCode': '94104',
'cc': 'US',
'city': 'San Francisco',
'state': 'CA',
'country': 'United States',
'formattedAddress': ['554 Market St (btw 2nd St & Sutter St)',
'San Francisco, CA 94104',
'United States']},

```

```

'categories': [{ 'id': '4bf58dd8d48988d118941735',
  'name': 'Dive Bar',
  'pluralName': 'Dive Bars',
  'shortName': 'Dive Bar',
  'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/nightlife/divebar_',
    'suffix': '.png' },
  'primary': True }],
'photos': { 'count': 0, 'groups': [] },
'referralId': 'e-0-4686529ff964a5203b481fe3-4'},
{'reasons': { 'count': 0,
  'items': [{ 'summary': 'This spot is popular',
    'type': 'general',
    'reasonName': 'globalInteractionReason' } ] },
'venue': { 'id': '42a63500f964a52003251fe3',
  'name': "Kate O'Brien's",
  'location': { 'address': '579 Howard St',
    'crossStreet': 'at 2nd St',
    'lat': 37.78718769656639,
    'lng': -122.39770422475951,
    'labeledLatLngs': [ { 'label': 'display',
      'lat': 37.78718769656639,
      'lng': -122.39770422475951 } ],
    'distance': 832,
    'postalCode': '94105',
    'cc': 'US',
    'city': 'San Francisco',
    'state': 'CA',
    'country': 'United States',
    'formattedAddress': [ '579 Howard St (at 2nd St)',
      'San Francisco, CA 94105',
      'United States' ] },
'categories': [ { 'id': '4bf58dd8d48988d11b941735',
  'name': 'Pub',
  'pluralName': 'Pubs',
  'shortName': 'Pub',
  'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/nightlife/pub_',
    'suffix': '.png' },
  'primary': True } ],
'photos': { 'count': 0, 'groups': [] },
'venuePage': { 'id': '89995629' } },
'referralId': 'e-0-42a63500f964a52003251fe3-5'},
{'reasons': { 'count': 0,
  'items': [{ 'summary': 'This spot is popular',
    'type': 'general',
    'reasonName': 'globalInteractionReason' } ] },
'venue': { 'id': '49cfa966f964a520b45a1fe3',
  'name': 'Urban Tavern',
  'location': { 'address': '333 Ofarrell St',

```



```

'crossStreet': 'at Mason St',
'lat': 37.786023679115644,
'lng': -122.41041107730479,
'labeledLatLngs': [{ 'label': 'display',
  'lat': 37.786023679115644,
  'lng': -122.41041107730479}],
'distance': 330,
'postalCode': '94102',
'cc': 'US',
'city': 'San Francisco',
'state': 'CA',
'country': 'United States',
'formattedAddress': ['333 Ofarrell St (at Mason St)',
  'San Francisco, CA 94102',
  'United States']],
'categories': [{ 'id': '4bf58dd8d48988d14e941735',
  'name': 'American Restaurant',
  'pluralName': 'American Restaurants',
  'shortName': 'American',
  'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/default_',
  'suffix': '.png'},
  'primary': True}],
'photos': { 'count': 0, 'groups': []},
'venuePage': { 'id': '37630450' },
'referralId': 'e-0-49cfa966f964a520b45a1fe3-6',
{'reasons': { 'count': 0,
  'items': [{ 'summary': 'This spot is popular',
  'type': 'general',
  'reasonName': 'globalInteractionReason' } ]},
'venue': { 'id': '4afb14b4f964a520f51a22e3',
  'name': "David's Delicatessen & Restaurant",
  'location': { 'address': '480 Geary St',
  'lat': 37.787025847529975,
  'lng': -122.41104057713176,
  'labeledLatLngs': [{ 'label': 'display',
  'lat': 37.787025847529975,
  'lng': -122.41104057713176}],
  'distance': 345,
  'postalCode': '94102',
  'cc': 'US',
  'city': 'San Francisco',
  'state': 'CA',
  'country': 'United States',
  'formattedAddress': ['480 Geary St',
  'San Francisco, CA 94102',
  'United States']],
'categories': [{ 'id': '4bf58dd8d48988d146941735',
  'name': 'Deli / Bodega',

```

```

    'pluralName': 'Delis / Bodegas',
    'shortName': 'Deli / Bodega',
    'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'primary': True}],
    'photos': {'count': 0, 'groups': []}},
    'referralId': 'e-0-4afb14b4f964a520f51a22e3-7'}}]]}}

```

Now we got all the details of the restaurants in Downtown that is in the neighborhood's 1000-meter radius in json format. Let's check in json's response how many restaurants are there.

```

In [30]: Restaurants= len(results['response'])
        print ('There are', Restaurants , 'restaurants.')

```

There are 8 restaurants.

Let's also get one venue id from json response and use VenueID end point of foursquare to get venue details

```

In [31]: url2 = 'https://api.foursquare.com/v2/venues/58cc4d2fe0adac17bbf4838e?&client_id={} &client_secret=
        CLIENT_ID,
        CLIENT_SECRET,
        VERSION,
        latitude,
        longitude
        )
        results2 = requests.get(url2).json()
        results2

```

```

Out[31]: {'meta': {'code': 200, 'requestId': '5cedff1b6a607149395b04bf'},
  'response': {'venue': {'id': '58cc4d2fe0adac17bbf4838e',
    'name': 'Pushkin',
    'contact': {'phone': '4159013434',
    'formattedPhone': '(415) 901-3434',
    'instagram': 'pushkinsf',
    'facebook': '392957711051136',
    'facebookUsername': 'pushkinsf',
    'facebookName': 'Pushkin'},
    'location': {'address': '380 Bush St',
    'crossStreet': 'at Kearny St',
    'lat': 37.79094301071348,
    'lng': -122.40387738626474,
    'labeledLatLngs': [{'label': 'display',
    'lat': 37.79094301071348,
    'lng': -122.40387738626474}],
    'distance': 478,
    'postalCode': '94104',
    'cc': 'US',

```

```

'city': 'San Francisco',
'state': 'CA',
'country': 'United States',
'formattedAddress': ['380 Bush St (at Kearny St)',
'San Francisco, CA 94104',
'United States']],
'canonicalUrl': 'https://foursquare.com/v/pushkin/58cc4d2fe0adac17bbf4838e',
'categories': [{ 'id': '5293a7563cf9994f4e043a44',
'name': 'Russian Restaurant',
'pluralName': 'Russian Restaurants',
'shortName': 'Russian',
'icon': { 'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/russian_',
'suffix': '.png'},
'primary': True}],
'verified': False,
'stats': { 'tipCount': 14},
'url': 'https://www.pushkinsf.com',
'likes': { 'count': 87,
'groups': [{ 'type': 'others', 'count': 87, 'items': []}],
'summary': '87 Likes'},
'dislike': False,
'ok': False,
'rating': 9.5,
'ratingColor': '00B551',
'ratingSignals': 97,
'allowMenuUrlEdit': True,
'beenHere': { 'count': 0,
'unconfirmedCount': 0,
'marked': False,
'lastCheckinExpiredAt': 0},
'specials': { 'count': 0, 'items': []},
'photos': { 'count': 26,
'groups': [{ 'type': 'checkin',
'name': "Friends' check-in photos",
'count': 0,
'items': []},
{ 'type': 'venue',
'name': 'Venue photos',
'count': 26,
'items': [{ 'id': '5c5de72f82a750002c7bb289',
'createdAt': 1549657903,
'source': { 'name': 'Swarm for iOS', 'url': 'https://www.swarmapp.com'},
'prefix': 'https://fastly.4sqi.net/img/general/',
'suffix': '/633660_IjKhUMgaGXIZoq3PFQ56vQoNjGjHMued19t7QngamvY.jpg',
'width': 1440,
'height': 1920,
'user': { 'id': '633660',
'firstName': 'Ruslan',

```

```

    'lastName': 'Abdikeev',
    'gender': 'male',
    'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
      'suffix': '/MNUPLN34FGIDKQSU.jpg'}},
    'visibility': 'public'},
  {'id': '5c51320a3149b9002c3d31d7',
    'createdAt': 1548825098,
    'source': {'name': 'Foursquare for iOS',
      'url': 'https://foursquare.com/download/#/iphone'},
    'prefix': 'https://fastly.4sqi.net/img/general/',
    'suffix': '/7440763_um-z3ZpRod-YrcywicbgrW7ug8MGfAsphNrIjaKyCCA.jpg',
    'width': 1440,
    'height': 1920,
    'user': {'id': '7440763',
      'firstName': 'Andrew',
      'lastName': 'De la rosa',
      'gender': 'male',
      'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
        'suffix': '/T1QU44YUEWGMWDZH.jpg'}},
    'visibility': 'public'}}],
  'summary': '0 photos',
  'reasons': {'count': 1,
    'items': [{'summary': 'Lots of people like this place',
      'type': 'general',
      'reasonName': 'rawLikesReason'}]},
  'hereNow': {'count': 0, 'summary': 'Nobody here', 'groups': []},
  'createdAt': 1489784111,
  'tips': {'count': 14,
    'groups': [{'type': 'others',
      'name': 'All tips',
      'count': 14,
      'items': [{'id': '5aac0e889b04733381f1dbb8',
        'createdAt': 1521225352,
        'text': 'The best (and probably only) pelmeni east of Golden Gate Park.',
        'type': 'user',
        'canonicalUrl': 'https://foursquare.com/item/5aac0e889b04733381f1dbb8',
        'lang': 'en',
        'likes': {'count': 1,
          'groups': [{'type': 'others', 'count': 1, 'items': []}],
          'summary': '1 like'},
        'logView': True,
        'agreeCount': 1,
        'disagreeCount': 0,
        'todo': {'count': 0},
        'user': {'id': '87053870',
          'firstName': 'Chuck',
          'lastName': 'Roslof',
          'gender': 'male',

```

```

    'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
      'suffix': '/87053870-4JFTGCXXPGLHYCLE.jpg'}},
    'authorInteractionType': 'liked'},
  {'id': '5be5e15ccb3fd2002cd4e01c',
    'createdAt': 1541792092,
    'text': 'Borsch and dumplings are amazing',
    'type': 'user',
    'canonicalUrl': 'https://foursquare.com/item/5be5e15ccb3fd2002cd4e01c',
    'lang': 'en',
    'likes': {'count': 0, 'groups': []},
    'logView': True,
    'agreeCount': 0,
    'disagreeCount': 0,
    'todo': {'count': 0},
    'user': {'id': '386367715',
      'firstName': 'Nikolay',
      'lastName': 'Krapivnyy',
      'gender': 'male',
      'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
        'suffix': '/blank_boy.png',
        'default': True}}},
    'authorInteractionType': 'liked'}}}],
  'shortUrl': 'http://4sq.com/2mBdBgE',
  'timeZone': 'America/Los_Angeles',
  'listed': {'count': 142,
    'groups': [{'type': 'others',
      'name': 'Lists from other people',
      'count': 142,
      'items': [{'id': '4fa0673be4b0dae72d8aaef4',
        'name': 'San Francisco - To Visit',
        'description': '',
        'type': 'others',
        'user': {'id': '1436512',
          'firstName': 'Mairbek',
          'lastName': 'Khadikov',
          'gender': 'male',
          'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
            'suffix': '/EAOSQHZZHBCNUWEW.jpg'}}},
        'editable': False,
        'public': True,
        'collaborative': False,
        'url': '/mairbek/list/san-francisco--to-visit',
        'canonicalUrl': 'https://foursquare.com/mairbek/list/san-francisco--to-visit',
        'createdAt': 1335912251,
        'updatedAt': 1529879686,
        'photo': {'id': '50367fbde4b0aae9b35da38f',
          'createdAt': 1345748925,
          'prefix': 'https://fastly.4sqi.net/img/general/',

```

```

'suffix': '/sVYp9x_svDZucDQRmeWs4C5L5f7mzLWFlu4IxC_Gj2Q.jpg',
'width': 540,
'height': 720,
'user': {'id': '1508229',
'firstName': 'Gayatri',
'lastName': 'Nair',
'gender': 'female',
'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
'suffix': '/PX1VO2Q05Z0XW01K.jpg'}}},
'visibility': 'public'},
'followers': {'count': 6},
'listItems': {'count': 65,
'items': [{ 'id': 'v58cc4d2fe0adac17bbf4838e',
'createdAt': 1529879686}]}},
{'id': '528fdc34498e45b5c4cdfb87',
'name': 'San Francisco',
'description': '',
'type': 'others',
'user': {'id': '1047239',
'firstName': 'Anne',
'lastName': 'L',
'gender': 'female',
'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
'suffix': '/1NOXVCM2PPDHTLGW.jpg'}}},
'editable': False,
'public': True,
'collaborative': False,
'url': '/user/1047239/list/san-francisco',
'canonicalUrl': 'https://foursquare.com/user/1047239/list/san-francisco',
'createdAt': 1385159732,
'updatedAt': 1548877936,
'photo': {'id': '50aff561e4b0a0a301f26dbd',
'createdAt': 1353708897,
'prefix': 'https://fastly.4sqi.net/img/general/',
'suffix': '/1004384_f5T2MXBPVo6PgvBMvnHnVE6-jMaKk2LCQ7_BXTBCEYs.jpg',
'width': 720,
'height': 540,
'user': {'id': '1004384',
'firstName': 'Jung-Ah',
'lastName': 'Yum',
'gender': 'female',
'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
'suffix': '/CZ0CCJBPEIQRRUO5.jpg'}}},
'visibility': 'public'},
'followers': {'count': 8},
'listItems': {'count': 249,
'items': [{ 'id': 'v58cc4d2fe0adac17bbf4838e',
'createdAt': 1505855058}]}},

```

```

{'id': '544977ab498edc36f699aad4',
 'name': 'SF Cheap Eats Continued',
 'description': 'Cheap food of all kinds all around the city\n\n WinstonWanders.com',
 'type': 'others',
 'user': {'id': '4083549',
 'firstName': 'Mike',
 'lastName': 'Winston',
 'gender': 'male',
 'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
 'suffix': '/4083549-14ZMSGT0BA3WO1OP.jpg'}},
 'editable': False,
 'public': True,
 'collaborative': False,
 'url': '/winstonwanders/list/sf-cheap-eats-continued',
 'canonicalUrl': 'https://foursquare.com/winstonwanders/list/sf-cheap-eats-continued',
 'createdAt': 1414100907,
 'updatedAt': 1557422002,
 'photo': {'id': '54c9152f11d26fca70975a3e',
 'createdAt': 1422464303,
 'prefix': 'https://fastly.4sqi.net/img/general/',
 'suffix': '/4083549_Xn8byNRmEKqSfRfKbPDzNx4YSdrH2kuUfhZpaowbY.jpg',
 'width': 1200,
 'height': 1200,
 'user': {'id': '4083549',
 'firstName': 'Mike',
 'lastName': 'Winston',
 'gender': 'male',
 'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
 'suffix': '/4083549-14ZMSGT0BA3WO1OP.jpg'}},
 'visibility': 'public'},
 'followers': {'count': 3},
 'listItems': {'count': 266,
 'items': [{'id': 't58dc48d5d6fe9045099e8aeb',
 'createdAt': 1490831586,
 'photo': {'id': '58dc48d7f3433526eb12dfb9',
 'createdAt': 1490831575,
 'prefix': 'https://fastly.4sqi.net/img/general/',
 'suffix': '/4083549_w02nQsrzFK0FHM7TvSqqxM0-xehqLkzIlfnIoZ_WwCE.jpg',
 'width': 1200,
 'height': 1200,
 'user': {'id': '4083549',
 'firstName': 'Mike',
 'lastName': 'Winston',
 'gender': 'male',
 'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
 'suffix': '/4083549-14ZMSGT0BA3WO1OP.jpg'}},
 'visibility': 'public'}}]}],
 'id': '5142a688e4b080a102b9f788',

```

```

'name': 'New places!',
'description': '',
'type': 'others',
'user': {'id': '262716',
'firstName': 'Rachel',
'lastName': 'Levy',
'gender': 'female',
'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
'suffix': '/262716-ZHUCDUND5WHSNKNE.jpg'}},
'editable': False,
'public': True,
'collaborative': False,
'url': '/user/262716/list/new-places',
'canonicalUrl': 'https://foursquare.com/user/262716/list/new-places',
'createdAt': 1363322504,
'updatedAt': 1558484305,
'photo': {'id': '531de8aa11d2584c986e0bb7',
'createdAt': 1394469034,
'prefix': 'https://fastly.4sqi.net/img/general/',
'suffix': '/3343327_R9M7-oq5H3x7Sp2LzX4FppUoH8X_QcBOuJxkEOyGs-Y.png',
'width': 806,
'height': 536,
'user': {'id': '3343327',
'firstName': 'Eater',
'gender': 'none',
'photo': {'prefix': 'https://fastly.4sqi.net/img/user/',
'suffix': '/3343327-YQ1D52V3KK2RQLBU.png'},
'type': 'page'},
'visibility': 'public'},
'followers': {'count': 7},
'listItems': {'count': 191,
'items': [{'id': 'v58cc4d2fe0adac17bbf4838e',
'createdAt': 1505781893}]}}],
'hours': {'status': 'Closed until 11:00 AM tomorrow',
'richStatus': {'entities': [], 'text': 'Closed until 11:00 AM tomorrow'},
'isOpen': False,
'isLocalHoliday': False,
'dayData': [],
'timeframes': [{'days': 'MonFri',
'includesToday': True,
'open': [{'renderedTime': '11:00 AM2:00 PM'}],
'segments': []}]},
'popular': {'isOpen': False,
'isLocalHoliday': False,
'timeframes': [{'days': 'Today',
'includesToday': True,
'open': [{'renderedTime': '8:00 AM9:00 AM'},
{'renderedTime': '11:00 AM2:00 PM'}],

```



```

    'segments': [],
    {'days': 'Wed',
     'open': [{'renderedTime': '11:00 AM2:00 PM'}]},
    'segments': [],
    {'days': 'Thu',
     'open': [{'renderedTime': '8:00 AM9:00 AM'},
               {'renderedTime': '11:00 AM3:00 PM'}]},
    'segments': [],
    {'days': 'Fri',
     'open': [{'renderedTime': '8:00 AM9:00 AM'},
               {'renderedTime': '11:00 AM2:00 PM'}]},
    'segments': [],
    {'days': 'SatSun', 'open': [{'renderedTime': 'None'}]}, 'segments': [],
    {'days': 'Mon',
     'open': [{'renderedTime': '8:00 AM9:00 AM'},
               {'renderedTime': '11:00 AM2:00 PM'}]},
    'segments': []]]},
'pageUpdates': {'count': 0, 'items': []},
'inbox': {'count': 0, 'items': []},
'parent': {'id': '50218be1e4b013ec08cd2d4c',
            'name': 'International Food Court',
            'location': {'address': '320 Bush St',
                          'crossStreet': 'at Kearny St',
                          'lat': 37.790902,
                          'lng': -122.403755,
                          'labeledLatLngs': [{'label': 'display',
                                                'lat': 37.790902,
                                                'lng': -122.403755}]},
            'distance': 481,
            'postalCode': '94104',
            'cc': 'US',
            'city': 'San Francisco',
            'state': 'CA',
            'country': 'United States',
            'formattedAddress': ['320 Bush St (at Kearny St)',
                                 'San Francisco, CA 94104',
                                 'United States']},
'categories': [{'id': '4bf58dd8d48988d120951735',
                 'name': 'Food Court',
                 'pluralName': 'Food Courts',
                 'shortName': 'Food Court',
                 'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/shops/food_foodcourt_',
                           'suffix': '.png'},
                 'primary': True}]],
'hierarchy': [{'name': 'International Food Court',
                'lang': 'en',
                'id': '50218be1e4b013ec08cd2d4c',
                'canonicalUrl': 'https://foursquare.com/v/international-food-court/50218be1e4b013ec08cd2d4c'}],

```

```

'attributes': {'groups': [{'type': 'reservations',
  'name': 'Reservations',
  'count': 3,
  'items': [{'displayName': 'Reservations', 'displayValue': 'No'}]},
{'type': 'payments',
  'name': 'Credit Cards',
  'summary': 'Credit Cards',
  'count': 7,
  'items': [{'displayName': 'Credit Cards', 'displayValue': 'Yes'}]},
{'type': 'serves',
  'name': 'Menus',
  'summary': 'Lunch',
  'count': 8,
  'items': [{'displayName': 'Lunch', 'displayValue': 'Lunch'}]},
{'type': 'diningOptions',
  'name': 'Dining Options',
  'summary': 'Delivery',
  'count': 5,
  'items': [{'displayName': 'Delivery', 'displayValue': 'Delivery'}]}]},
'bestPhoto': {'id': '5c5de72f82a750002c7bb289',
'createdAt': 1549657903,
'source': {'name': 'Swarm for iOS', 'url': 'https://www.swarmapp.com'},
'prefix': 'https://fastly.4sqi.net/img/general/',
'suffix': '/633660_IjKhUMgaGXIZoq3PFQ56vQoNjGjHMued19t7QngamvY.jpg',
'width': 1440,
'height': 1920,
'visibility': 'public'},
'colors': {'highlightColor': {'photoId': '5c5de72f82a750002c7bb289',
'value': -14671840},
'highlightTextColor': {'photoId': '5c5de72f82a750002c7bb289', 'value': -1},
'algoVersion': 3}}}}

```

```

In [32]: restaurantrating= results2['response']['venue']['rating']
         restaurantrating

```

```

Out[32]: 9.5

```

Like this, we can get the rating value from json for each neighborhood and calculate the final score.

- Please note that I showed an example in this data section for only one neighborhood. For all neighborhoods, I will use the loop to execute the formula and final results. I will do all the calculation part for all neighborhoods in the reporting methodology section.