

# Introduction/Business Problem

I am looking for a locality in Manhattan to start a new restaurant. I am from Bangalore (India) and it is difficult to obtain the data of Bangalore city in json format. I want the locality to have a lot of customers and at the same time less competition for my restaurant so that I can prosper in my business. I will be using the skills that I have learnt in this course to do the task.

## Data

I would be needing the following data to proceed with the task:

- Different localities of Manhattan.
- The coordinates (latitude, longitude) of these localities of Manhattan from Open Street Map APIs
- From Foursquare we will need following venues data:
  - Different restaurant in the Localities
  - Offices in the Localities
  - Schools/Colleges in the Localities

I will then leverage the available data in order to determine which locality would be the most appropriate in order to locate my new restaurant.

## Methodology

### Importing the libraries that I would need in this notebook

In [0]:

```
import numpy as np
import time
import pandas as pd
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)

import json
import requests
from pandas.io.json import json_normalize

from geopy.geocoders import Nominatim

import folium
from folium import plugins

# Plotting related libraries
import matplotlib.cm as cm
import matplotlib.colors as colors
import seaborn as sns

# Clustering - Unsupervised Machine Learning
from sklearn.cluster import KMeans

print('All the libraries required for this notebook are imported. You can proceed with your work now!')
```

All the libraries required for this notebook are imported. You can proceed with your work now!

### Loading and Exploring the dataset

In [0]:

```
!wget -q -O 'newyork_data.json' https://cocl.us/new_york_dataset
print('Data is downloaded!')
```

Data is downloaded!

## Loading the data

In [0]:

```
with open('newyork_data.json') as json_data:
    newyork_data = json.load(json_data)
```

## Having a quick look at the data

In [0]:

```
newyork_data
```

Out[0]:

```
{'bbox': [-74.2492599487305,
  40.5033187866211,
  -73.7061614990234,
  40.9105606079102],
'crs': {'properties': {'name': 'urn:ogc:def:crs:EPSG::4326'}, 'type': 'name'},
'features': [{'geometry': {'coordinates': [-73.84720052054902,
  40.89470517661],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.1',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Wakefield',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.84720052054902,
      40.89470517661,
      -73.84720052054902,
      40.89470517661],
    'borough': 'Bronx',
    'name': 'Wakefield',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.82993910812398, 40.87429419303012],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.2',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Co-op',
    'annoline2': 'City',
    'annoline3': None,
    'bbox': [-73.82993910812398,
      40.87429419303012,
      -73.82993910812398,
      40.87429419303012],
    'borough': 'Bronx',
    'name': 'Co-op City',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.82780644716412, 40.887555677350775],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.3',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Eastchester',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.82780644716412,
      40.887555677350775,
      -73.82780644716412,
      40.887555677350775],
    'borough': 'Bronx',
    'name': 'Eastchester',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.90564259591682, 40.89543742690383],
  'type': 'Point'}
```

```
'geometry_name': 'geom',
'id': 'nyu_2451_34572.4',
'properties': {'annoangle': 0.0,
'annoline1': 'Fieldston',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90564259591682,
40.89543742690383,
-73.90564259591682,
40.89543742690383],
'borough': 'Bronx',
'name': 'Fieldston',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9125854610857, 40.890834493891305],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.5',
'properties': {'annoangle': 0.0,
'annoline1': 'Riverdale',
'annoline2': None,
'annoline3': None,
'bbox': [-73.9125854610857,
40.890834493891305,
-73.9125854610857,
40.890834493891305],
'borough': 'Bronx',
'name': 'Riverdale',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90281798724604, 40.88168737120521],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.6',
'properties': {'annoangle': 0.0,
'annoline1': 'Kingsbridge',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90281798724604,
40.88168737120521,
-73.90281798724604,
40.88168737120521],
'borough': 'Bronx',
'name': 'Kingsbridge',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91065965862981, 40.87655077879964],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.7',
'properties': {'annoangle': 0.0,
'annoline1': 'Marble',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.91065965862981,
40.87655077879964,
-73.91065965862981,
40.87655077879964],
'borough': 'Manhattan',
'name': 'Marble Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.86731496814176, 40.89827261213805],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.8',
'properties': {'annoangle': 0.0,
'annoline1': 'Woodlawn',
'annoline2': None,
'annoline3': None,
'bbox': [-73.86731496814176,
40.89827261213805,
-73.86731496814176,
40.89827261213805],
'borough': 'Bronx',
'name': 'Woodlawn',
'stacked': 1},
```

```
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.8793907395681, 40.87722415599446],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.9',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Norwood',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.8793907395681,
        40.87722415599446,
        -73.8793907395681,
        40.87722415599446],
      'borough': 'Bronx',
      'name': 'Norwood',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.85744642974207, 40.88103887819211],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.10',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Williamsbridge',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.85744642974207,
        40.88103887819211,
        -73.85744642974207,
        40.88103887819211],
      'borough': 'Bronx',
      'name': 'Williamsbridge',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.83579759808117, 40.866858107252696],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.11',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Baychester',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.83579759808117,
        40.866858107252696,
        -73.83579759808117,
        40.866858107252696],
      'borough': 'Bronx',
      'name': 'Baychester',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.85475564017999, 40.85741349808865],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.12',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Pelham Parkway',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.85475564017999,
        40.85741349808865,
        -73.85475564017999,
        40.85741349808865],
      'borough': 'Bronx',
      'name': 'Pelham Parkway',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.78648845267413, 40.84724670491813],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.13',
    'properties': {'annoangle': 0.0,
      'annoline1': 'City',
      'annoline2': 'Island',
      'annoline3': None,
      'bbox': [-73.78648845267413,
        40.84724670491813,
        -73.78648845267413,
        40.84724670491813],
```

```
'borough': 'Bronx',
'name': 'City Island',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8855121841913, 40.870185164975325],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.14',
'properties': {'annoangle': 0.0,
'annoline1': 'Bedford',
'annoline2': 'Park',
'annoline3': None,
'bbox': [-73.8855121841913,
40.870185164975325,
-73.8855121841913,
40.870185164975325],
'borough': 'Bronx',
'name': 'Bedford Park',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9104159619131, 40.85572707719664],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.15',
'properties': {'annoangle': 0.0,
'annoline1': 'University',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.9104159619131,
40.85572707719664,
-73.9104159619131,
40.85572707719664],
'borough': 'Bronx',
'name': 'University Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91967159119565, 40.84789792606271],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.16',
'properties': {'annoangle': 0.0,
'annoline1': 'Morris',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.91967159119565,
40.84789792606271,
-73.91967159119565,
40.84789792606271],
'borough': 'Bronx',
'name': 'Morris Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.89642655981623, 40.86099679638654],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.17',
'properties': {'annoangle': 0.0,
'annoline1': 'Fordham',
'annoline2': None,
'annoline3': None,
'bbox': [-73.89642655981623,
40.86099679638654,
-73.89642655981623,
40.86099679638654],
'borough': 'Bronx',
'name': 'Fordham',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.88735617532338, 40.84269615786053],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.18',
'properties': {'annoangle': 0.0,
'annoline1': 'East',
'annoline2': 'Tremont',
'annoline3': None,
'bbox': [-73.88735617532338,
```

```

40.84269615786053,
-73.88735617532338,
40.84269615786053],
'borough': 'Bronx',
'name': 'East Tremont',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.87774474910545, 40.83947505672653],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.19',
'properties': {'annoangle': 0.0,
'annoline1': 'West',
'annoline2': 'Farms',
'annoline3': None,
'bbox': [-73.87774474910545,
40.83947505672653,
-73.87774474910545,
40.83947505672653],
'borough': 'Bronx',
'name': 'West Farms',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9261020935813, 40.836623010706056],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.20',
'properties': {'annoangle': 0.0,
'annoline1': 'Highbridge',
'annoline2': None,
'annoline3': None,
'bbox': [-73.9261020935813,
40.836623010706056,
-73.9261020935813,
40.836623010706056],
'borough': 'Bronx',
'name': 'High Bridge',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90942160757436, 40.819754370594936],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.21',
'properties': {'annoangle': 0.0,
'annoline1': 'Melrose',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90942160757436,
40.819754370594936,
-73.90942160757436,
40.819754370594936],
'borough': 'Bronx',
'name': 'Melrose',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91609987487575, 40.80623874935177],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.22',
'properties': {'annoangle': 0.0,
'annoline1': 'Mott Haven',
'annoline2': None,
'annoline3': None,
'bbox': [-73.91609987487575,
40.80623874935177,
-73.91609987487575,
40.80623874935177],
'borough': 'Bronx',
'name': 'Mott Haven',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91322139386135, 40.801663627756206],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.23',
'properties': {'annoangle': 0.0,
'annoline1': 'Port',

```

```
'annoline2': 'Morris',
'annoline3': None,
'bbox': [-73.91322139386135,
40.801663627756206,
-73.91322139386135,
40.801663627756206],
'borough': 'Bronx',
'name': 'Port Morris',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8957882009446, 40.81509904545822],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.24',
'properties': {'annoangle': 0.0,
'annoline1': 'Longwood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.8957882009446,
40.81509904545822,
-73.8957882009446,
40.81509904545822],
'borough': 'Bronx',
'name': 'Longwood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.88331505955291, 40.80972987938709],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.25',
'properties': {'annoangle': 0.0,
'annoline1': 'Hunts',
'annoline2': 'Point',
'annoline3': None,
'bbox': [-73.88331505955291,
40.80972987938709,
-73.88331505955291,
40.80972987938709],
'borough': 'Bronx',
'name': 'Hunts Point',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90150648943059, 40.82359198585534],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.26',
'properties': {'annoangle': 0.0,
'annoline1': 'Morrisania',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90150648943059,
40.82359198585534,
-73.90150648943059,
40.82359198585534],
'borough': 'Bronx',
'name': 'Morrisania',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.86574609554924, 40.821012197914015],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.27',
'properties': {'annoangle': 0.0,
'annoline1': 'Soundview',
'annoline2': None,
'annoline3': None,
'bbox': [-73.86574609554924,
40.821012197914015,
-73.86574609554924,
40.821012197914015],
'borough': 'Bronx',
'name': 'Soundview',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.85414416189266, 40.80655112003589],
'type': 'Point'},
'geometry_name': 'geom',
```

```

'id': 'nyu_2451_34572.28',
'properties': {'annoangle': 0.0,
'annoline1': 'Clason',
'annoline2': 'Point',
'annoline3': None,
'bbox': [-73.85414416189266,
40.80655112003589,
-73.85414416189266,
40.80655112003589],
'borough': 'Bronx',
'name': 'Clason Point',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.81635002158441, 40.81510925804005],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.29',
'properties': {'annoangle': 0.0,
'annoline1': 'Throgs Neck',
'annoline2': None,
'annoline3': None,
'bbox': [-73.81635002158441,
40.81510925804005,
-73.81635002158441,
40.81510925804005],
'borough': 'Bronx',
'name': 'Throgs Neck',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8240992675385, 40.844245936947374],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.30',
'properties': {'annoangle': 0.0,
'annoline1': 'Country',
'annoline2': 'Club',
'annoline3': None,
'bbox': [-73.8240992675385,
40.844245936947374,
-73.8240992675385,
40.844245936947374],
'borough': 'Bronx',
'name': 'Country Club',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.85600310535783, 40.837937822267286],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.31',
'properties': {'annoangle': 0.0,
'annoline1': 'Parkchester',
'annoline2': None,
'annoline3': None,
'bbox': [-73.85600310535783,
40.837937822267286,
-73.85600310535783,
40.837937822267286],
'borough': 'Bronx',
'name': 'Parkchester',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84219407604444, 40.8406194964327],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.32',
'properties': {'annoangle': 0.0,
'annoline1': 'Westchester',
'annoline2': 'Square',
'annoline3': None,
'bbox': [-73.84219407604444,
40.8406194964327,
-73.84219407604444,
40.8406194964327],
'borough': 'Bronx',
'name': 'Westchester Square',
'stacked': 2},
'type': 'Feature'},

```



```

    'geometry': {'coordinates': [-73.8662991807561, 40.84360847124718],
      'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.33',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Van',
      'annoline2': 'Nest',
      'annoline3': None,
      'bbox': [-73.8662991807561,
        40.84360847124718,
        -73.8662991807561,
        40.84360847124718],
      'borough': 'Bronx',
      'name': 'Van Nest',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.85040178030421, 40.847549063536334],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.34',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Morris Park',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.85040178030421,
        40.847549063536334,
        -73.85040178030421,
        40.847549063536334],
      'borough': 'Bronx',
      'name': 'Morris Park',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.88845196134804, 40.85727710073895],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.35',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Belmont',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.88845196134804,
        40.85727710073895,
        -73.88845196134804,
        40.85727710073895],
      'borough': 'Bronx',
      'name': 'Belmont',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.91719048210393, 40.88139497727086],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.36',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Spuyten',
      'annoline2': 'Duyvil',
      'annoline3': None,
      'bbox': [-73.91719048210393,
        40.88139497727086,
        -73.91719048210393,
        40.88139497727086],
      'borough': 'Bronx',
      'name': 'Spuyten Duyvil',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.90453054908927, 40.90854282950666],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.37',
    'properties': {'annoangle': 0.0,
      'annoline1': 'North',
      'annoline2': 'Riverdale',
      'annoline3': None,
      'bbox': [-73.90453054908927,
        40.90854282950666,
        -73.90453054908927,
        40.90854282950666],
      'borough': 'Bronx'.

```

```

    'name': 'North Riverdale',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.8320737824047, 40.85064140940335],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.38',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Pelham',
    'annoline2': 'Bay',
    'annoline3': None,
    'bbox': [-73.8320737824047,
      40.85064140940335,
      -73.8320737824047,
      40.85064140940335],
    'borough': 'Bronx',
    'name': 'Pelham Bay',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.82620275994073, 40.82657951686922],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.39',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Schuylerville',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.82620275994073,
      40.82657951686922,
      -73.82620275994073,
      40.82657951686922],
    'borough': 'Bronx',
    'name': 'Schuylerville',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.81388514428619, 40.821986118163494],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.40',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Edgewater',
    'annoline2': 'Park',
    'annoline3': None,
    'bbox': [-73.81388514428619,
      40.821986118163494,
      -73.81388514428619,
      40.821986118163494],
    'borough': 'Bronx',
    'name': 'Edgewater Park',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.84802729582735, 40.819014376988314],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.41',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Castle',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-73.84802729582735,
      40.819014376988314,
      -73.84802729582735,
      40.819014376988314],
    'borough': 'Bronx',
    'name': 'Castle Hill',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.86332361652777, 40.87137078192371],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.42',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Olinville',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.86332361652777,
      40.87137078192371,
      -73.86332361652777,
      40.87137078192371],
    'borough': 'Bronx',
    'name': 'Olinville',
    'stacked': 2},
  'type': 'Feature'}]

```

```

40.87137078192371,
-73.86332361652777,
40.87137078192371],
'borough': 'Bronx',
'name': 'Olinville',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84161194831223, 40.86296562477998],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.43',
'properties': {'annoangle': 0.0,
'annoline1': 'Pelham',
'annoline2': 'Gardens',
'annoline3': None,
'bbox': [-73.84161194831223,
40.86296562477998,
-73.84161194831223,
40.86296562477998],
'borough': 'Bronx',
'name': 'Pelham Gardens',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91558941773444, 40.83428380733851],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.44',
'properties': {'annoangle': 0.0,
'annoline1': 'Concourse',
'annoline2': None,
'annoline3': None,
'bbox': [-73.91558941773444,
40.83428380733851,
-73.91558941773444,
40.83428380733851],
'borough': 'Bronx',
'name': 'Concourse',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.85053524451935, 40.82977429787161],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.45',
'properties': {'annoangle': 0.0,
'annoline1': 'Unionport',
'annoline2': None,
'annoline3': None,
'bbox': [-73.85053524451935,
40.82977429787161,
-73.85053524451935,
40.82977429787161],
'borough': 'Bronx',
'name': 'Unionport',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84808271877168, 40.88456130303732],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.46',
'properties': {'annoangle': 0.0,
'annoline1': 'Edenwald',
'annoline2': None,
'annoline3': None,
'bbox': [-73.84808271877168,
40.88456130303732,
-73.84808271877168,
40.88456130303732],
'borough': 'Bronx',
'name': 'Edenwald',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.03062069353813, 40.625801065010656],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.47',
'properties': {'annoangle': 0.0,
'annoline1': 'Bay Ridge',
'annoline2': None

```

```

    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.03062069353813,
40.625801065010656,
-74.03062069353813,
40.625801065010656],
    'borough': 'Brooklyn',
    'name': 'Bay Ridge',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.99517998380729, 40.61100890202044],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.48',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Bensonhurst',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.99517998380729,
40.61100890202044,
-73.99517998380729,
40.61100890202044],
    'borough': 'Brooklyn',
    'name': 'Bensonhurst',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.01031618527784, 40.64510294925429],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.49',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Sunset',
    'annoline2': 'Park',
    'annoline3': None,
    'bbox': [-74.01031618527784,
40.64510294925429,
-74.01031618527784,
40.64510294925429],
    'borough': 'Brooklyn',
    'name': 'Sunset Park',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.95424093127393, 40.7302009848647],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.50',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Greenpoint',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.95424093127393,
40.7302009848647,
-73.95424093127393,
40.7302009848647],
    'borough': 'Brooklyn',
    'name': 'Greenpoint',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.97347087708445, 40.59526001306593],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.51',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Gravesend',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.97347087708445,
40.59526001306593,
-73.97347087708445,
40.59526001306593],
    'borough': 'Brooklyn',
    'name': 'Gravesend',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.96509448785336, 40.57682506566604],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.52',

```

```
    'nyu_2451_34572.52',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Brighton',
    'annoline2': 'Beach',
    'annoline3': None,
    'bbox': [-73.96509448785336,
    40.57682506566604,
    -73.96509448785336,
    40.57682506566604],
    'borough': 'Brooklyn',
    'name': 'Brighton Beach',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-73.94318640482979, 40.58689012678384],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.53',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Sheepshead',
    'annoline2': 'Bay',
    'annoline3': None,
    'bbox': [-73.94318640482979,
    40.58689012678384,
    -73.94318640482979,
    40.58689012678384],
    'borough': 'Brooklyn',
    'name': 'Sheepshead Bay',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-73.95743840559939, 40.61443251335098],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.54',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Manhattan',
    'annoline2': 'Terrace',
    'annoline3': None,
    'bbox': [-73.95743840559939,
    40.61443251335098,
    -73.95743840559939,
    40.61443251335098],
    'borough': 'Brooklyn',
    'name': 'Manhattan Terrace',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-73.95840106533903, 40.63632589026677],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.55',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Flatbush',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.95840106533903,
    40.63632589026677,
    -73.95840106533903,
    40.63632589026677],
    'borough': 'Brooklyn',
    'name': 'Flatbush',
    'stacked': 1},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-73.94329119073582, 40.67082917695294],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.56',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Crown',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-73.94329119073582,
    40.67082917695294,
    -73.94329119073582,
    40.67082917695294],
    'borough': 'Brooklyn',
    'name': 'Crown Heights',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-73.92610256185826, 40.64171776668861]
```

```
{ 'geometry': { 'coordinates': [-73.93610256185836, 40.64171776668961],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.57',  
  'properties': { 'annoangle': 0.0,  
    'annoline1': 'East Flatbush',  
    'annoline2': None,  
    'annoline3': None,  
    'bbox': [-73.93610256185836,  
      40.64171776668961,  
      -73.93610256185836,  
      40.64171776668961],  
    'borough': 'Brooklyn',  
    'name': 'East Flatbush',  
    'stacked': 1},  
  'type': 'Feature'},  
{ 'geometry': { 'coordinates': [-73.98042110559474, 40.642381958003526],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.58',  
  'properties': { 'annoangle': 0.0,  
    'annoline1': 'Kensington',  
    'annoline2': None,  
    'annoline3': None,  
    'bbox': [-73.98042110559474,  
      40.642381958003526,  
      -73.98042110559474,  
      40.642381958003526],  
    'borough': 'Brooklyn',  
    'name': 'Kensington',  
    'stacked': 1},  
  'type': 'Feature'},  
{ 'geometry': { 'coordinates': [-73.98007340430172, 40.65694583575104],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.59',  
  'properties': { 'annoangle': 0.0,  
    'annoline1': 'Windsor',  
    'annoline2': 'Terrace',  
    'annoline3': None,  
    'bbox': [-73.98007340430172,  
      40.65694583575104,  
      -73.98007340430172,  
      40.65694583575104],  
    'borough': 'Brooklyn',  
    'name': 'Windsor Terrace',  
    'stacked': 2},  
  'type': 'Feature'},  
{ 'geometry': { 'coordinates': [-73.9648592426269, 40.676822262254724],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.60',  
  'properties': { 'annoangle': 0.0,  
    'annoline1': 'Prospect',  
    'annoline2': 'Heights',  
    'annoline3': None,  
    'bbox': [-73.9648592426269,  
      40.676822262254724,  
      -73.9648592426269,  
      40.676822262254724],  
    'borough': 'Brooklyn',  
    'name': 'Prospect Heights',  
    'stacked': 2},  
  'type': 'Feature'},  
{ 'geometry': { 'coordinates': [-73.91023536176607, 40.66394994339755],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.61',  
  'properties': { 'annoangle': 0.0,  
    'annoline1': 'Brownsville',  
    'annoline2': None,  
    'annoline3': None,  
    'bbox': [-73.91023536176607,  
      40.66394994339755,  
      -73.91023536176607,  
      40.66394994339755],  
    'borough': 'Brooklyn',  
    'name': 'Brownsville',  
    'stacked': 1},  
  'type': 'Feature'}
```

```
    'name': 'Brownsville',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.95811529220927, 40.70714439344251],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.62',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Williamsburg',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.95811529220927,
      40.70714439344251,
      -73.95811529220927,
      40.70714439344251],
    'borough': 'Brooklyn',
    'name': 'Williamsburg',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.92525797487045, 40.69811611017901],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.63',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Bushwick',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.92525797487045,
      40.69811611017901,
      -73.92525797487045,
      40.69811611017901],
    'borough': 'Brooklyn',
    'name': 'Bushwick',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.94178488690297, 40.687231607720456],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.64',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Bedford Stuyvesant',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.94178488690297,
      40.687231607720456,
      -73.94178488690297,
      40.687231607720456],
    'borough': 'Brooklyn',
    'name': 'Bedford Stuyvesant',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.99378225496424, 40.695863722724084],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.65',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Brooklyn',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-73.99378225496424,
      40.695863722724084,
      -73.99378225496424,
      40.695863722724084],
    'borough': 'Brooklyn',
    'name': 'Brooklyn Heights',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.99856139218463, 40.687919722485574],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.66',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Cobble',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-73.99856139218463,
      40.687919722485574,
      -73.99856139218463,
      40.687919722485574],
    'borough': 'Brooklyn',
    'name': 'Cobble Hill',
    'stacked': 2},
    'type': 'Feature'}
```

```

-73.99856139218463,
40.687919722485574],
'borough': 'Brooklyn',
'name': 'Cobble Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99465372828006, 40.680540231076485],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.67',
'properties': {'annoangle': 0.0,
'annoline1': 'Carroll',
'annoline2': 'Gardens',
'annoline3': None,
'bbox': [-73.99465372828006,
40.680540231076485,
-73.99465372828006,
40.680540231076485],
'borough': 'Brooklyn',
'name': 'Carroll Gardens',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.0127589747356, 40.676253230250886],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.68',
'properties': {'annoangle': 0.0,
'annoline1': 'Red',
'annoline2': 'Hook',
'annoline3': None,
'bbox': [-74.0127589747356,
40.676253230250886,
-74.0127589747356,
40.676253230250886],
'borough': 'Brooklyn',
'name': 'Red Hook',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99444087145339, 40.673931143187154],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.69',
'properties': {'annoangle': 0.0,
'annoline1': 'Gowanus',
'annoline2': None,
'annoline3': None,
'bbox': [-73.99444087145339,
40.673931143187154,
-73.99444087145339,
40.673931143187154],
'borough': 'Brooklyn',
'name': 'Gowanus',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.97290574369092, 40.68852726018977],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.70',
'properties': {'annoangle': 0.0,
'annoline1': 'Fort',
'annoline2': 'Greene',
'annoline3': None,
'bbox': [-73.97290574369092,
40.68852726018977,
-73.97290574369092,
40.68852726018977],
'borough': 'Brooklyn',
'name': 'Fort Greene',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.97705030183924, 40.67232052268197],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.71',
'properties': {'annoangle': 0.0,
'annoline1': 'Park',
'annoline2': 'Slope',

```



```
'annoline3': None,
'bbox': [-73.97705030183924,
40.67232052268197,
-73.97705030183924,
40.67232052268197],
'borough': 'Brooklyn',
'name': 'Park Slope',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.87661596457296, 40.68239101144211],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.72',
'properties': {'annoangle': 0.0,
'annoline1': 'Cypress',
'annoline2': 'Hills',
'annoline3': None,
'bbox': [-73.87661596457296,
40.68239101144211,
-73.87661596457296,
40.68239101144211],
'borough': 'Brooklyn',
'name': 'Cypress Hills',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.88069863917366, 40.669925700847045],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.73',
'properties': {'annoangle': 0.0,
'annoline1': 'East New York',
'annoline2': None,
'annoline3': None,
'bbox': [-73.88069863917366,
40.669925700847045,
-73.88069863917366,
40.669925700847045],
'borough': 'Brooklyn',
'name': 'East New York',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.87936970045875, 40.64758905230874],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.74',
'properties': {'annoangle': 0.0,
'annoline1': 'Starrett',
'annoline2': 'City',
'annoline3': None,
'bbox': [-73.87936970045875,
40.64758905230874,
-73.87936970045875,
40.64758905230874],
'borough': 'Brooklyn',
'name': 'Starrett City',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90209269778966, 40.63556432797428],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.75',
'properties': {'annoangle': 0.0,
'annoline1': 'Canarsie',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90209269778966,
40.63556432797428,
-73.90209269778966,
40.63556432797428],
'borough': 'Brooklyn',
'name': 'Canarsie',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.92911302644674, 40.630446043757466],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.76',
```

```
'properties': {'annoangle': 0.0,
'annoline1': 'Flatlands',
'annoline2': None,
'annoline3': None,
'bbox': [-73.92911302644674,
40.630446043757466,
-73.92911302644674,
40.630446043757466],
'borough': 'Brooklyn',
'name': 'Flatlands',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90818571777423, 40.606336421685626],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.77',
'properties': {'annoangle': 0.0,
'annoline1': 'Mill',
'annoline2': 'Island',
'annoline3': None,
'bbox': [-73.90818571777423,
40.606336421685626,
-73.90818571777423,
40.606336421685626],
'borough': 'Brooklyn',
'name': 'Mill Island',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.94353722891886, 40.57791350308657],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.78',
'properties': {'annoangle': 0.0,
'annoline1': 'Manhattan',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-73.94353722891886,
40.57791350308657,
-73.94353722891886,
40.57791350308657],
'borough': 'Brooklyn',
'name': 'Manhattan Beach',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98868295821637, 40.57429256471601],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.79',
'properties': {'annoangle': 0.0,
'annoline1': 'Coney Island',
'annoline2': None,
'annoline3': None,
'bbox': [-73.98868295821637,
40.57429256471601,
-73.98868295821637,
40.57429256471601],
'borough': 'Brooklyn',
'name': 'Coney Island',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99875221443519, 40.59951870282238],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.80',
'properties': {'annoangle': 0.0,
'annoline1': 'Bath',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-73.99875221443519,
40.59951870282238,
-73.99875221443519,
40.59951870282238],
'borough': 'Brooklyn',
'name': 'Bath Beach',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99049823044811, 40.633130512758015],
```

```
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.81',
'properties': {'annoangle': 0.0,
'annoline1': 'Borough',
'annoline2': 'Park',
'annoline3': None,
'bbox': [-73.99049823044811,
40.633130512758015,
-73.99049823044811,
40.633130512758015],
'borough': 'Brooklyn',
'name': 'Borough Park',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.01931375636022, 40.619219457722636],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.82',
'properties': {'annoangle': 0.0,
'annoline1': 'Dyker',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-74.01931375636022,
40.619219457722636,
-74.01931375636022,
40.619219457722636],
'borough': 'Brooklyn',
'name': 'Dyker Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93010170691196, 40.590848433902046],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.83',
'properties': {'annoangle': 0.0,
'annoline1': 'Gerritsen',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-73.93010170691196,
40.590848433902046,
-73.93010170691196,
40.590848433902046],
'borough': 'Brooklyn',
'name': 'Gerritsen Beach',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93134404108497, 40.609747779894604],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.84',
'properties': {'annoangle': 0.0,
'annoline1': 'Marine Park',
'annoline2': None,
'annoline3': None,
'bbox': [-73.93134404108497,
40.609747779894604,
-73.93134404108497,
40.609747779894604],
'borough': 'Brooklyn',
'name': 'Marine Park',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96784306216367, 40.693229421881504],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.85',
'properties': {'annoangle': 0.0,
'annoline1': 'Clinton',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.96784306216367,
40.693229421881504,
-73.96784306216367,
40.693229421881504],
'borough': 'Brooklyn',
'name': 'Clinton Hill',
```

```

    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.0078731120024, 40.57637537890224],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.86',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Sea',
      'annoline2': 'Gate',
      'annoline3': None,
      'bbox': [-74.0078731120024,
        40.57637537890224,
        -74.0078731120024,
        40.57637537890224],
      'borough': 'Brooklyn',
      'name': 'Sea Gate',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.98346337431099, 40.69084402109802],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.87',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Downtown',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.98346337431099,
        40.69084402109802,
        -73.98346337431099,
        40.69084402109802],
      'borough': 'Brooklyn',
      'name': 'Downtown',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.98374824115798, 40.685682912091444],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.88',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Boerum',
      'annoline2': 'Hill',
      'annoline3': None,
      'bbox': [-73.98374824115798,
        40.685682912091444,
        -73.98374824115798,
        40.685682912091444],
      'borough': 'Brooklyn',
      'name': 'Boerum Hill',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.95489867077713, 40.658420017469815],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.89',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Prospect',
      'annoline2': 'Lefferts',
      'annoline3': 'Gardens',
      'bbox': [-73.95489867077713,
        40.658420017469815,
        -73.95489867077713,
        40.658420017469815],
      'borough': 'Brooklyn',
      'name': 'Prospect Lefferts Gardens',
      'stacked': 3},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.91306831787395, 40.678402554795355],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.90',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Ocean',
      'annoline2': 'Hill',
      'annoline3': None,
      'bbox': [-73.91306831787395,
        40.678402554795355,
        -73.91306831787395,

```

```
40.678402554795355],
'borough': 'Brooklyn',
'name': 'Ocean Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.86797598081334, 40.67856995727479],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.91',
'properties': {'annoangle': 0.0,
'annoline1': 'City',
'annoline2': 'Line',
'annoline3': None,
'bbox': [-73.86797598081334,
40.67856995727479,
-73.86797598081334,
40.67856995727479],
'borough': 'Brooklyn',
'name': 'City Line',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.89855633630317, 40.61514955045308],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.92',
'properties': {'annoangle': 0.0,
'annoline1': 'Bergen',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-73.89855633630317,
40.61514955045308,
-73.89855633630317,
40.61514955045308],
'borough': 'Brooklyn',
'name': 'Bergen Beach',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.95759523489838, 40.62559589869843],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.93',
'properties': {'annoangle': 0.0,
'annoline1': 'Midwood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.95759523489838,
40.62559589869843,
-73.95759523489838,
40.62559589869843],
'borough': 'Brooklyn',
'name': 'Midwood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96261316716048, 40.647008603185185],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.94',
'properties': {'annoangle': 0.0,
'annoline1': 'Prospect',
'annoline2': 'Park South',
'annoline3': None,
'bbox': [-73.96261316716048,
40.647008603185185,
-73.96261316716048,
40.647008603185185],
'borough': 'Brooklyn',
'name': 'Prospect Park South',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91607483951324, 40.62384524478419],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.95',
'properties': {'annoangle': 0.0,
'annoline1': 'Georgetown',
'annoline2': None,
'annoline3': None,
```

```
'bbox': [-73.91607483951324,
40.62384524478419,
-73.91607483951324,
40.62384524478419],
'borough': 'Brooklyn',
'name': 'Georgetown',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93885815269195, 40.70849241041548],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.96',
'properties': {'annoangle': 0.0,
'annoline1': 'East',
'annoline2': 'Williamsburg',
'annoline3': None,
'bbox': [-73.93885815269195,
40.70849241041548,
-73.93885815269195,
40.70849241041548],
'borough': 'Brooklyn',
'name': 'East Williamsburg',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.95880857587582, 40.714822906532014],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.97',
'properties': {'annoangle': 0.0,
'annoline1': 'North Side',
'annoline2': None,
'annoline3': None,
'bbox': [-73.95880857587582,
40.714822906532014,
-73.95880857587582,
40.714822906532014],
'borough': 'Brooklyn',
'name': 'North Side',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.95800095153331, 40.71086147265064],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.98',
'properties': {'annoangle': 0.0,
'annoline1': 'South Side',
'annoline2': None,
'annoline3': None,
'bbox': [-73.95800095153331,
40.71086147265064,
-73.95800095153331,
40.71086147265064],
'borough': 'Brooklyn',
'name': 'South Side',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96836678035541, 40.61305976667942],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.99',
'properties': {'annoangle': 0.0,
'annoline1': 'Ocean',
'annoline2': 'Parkway',
'annoline3': None,
'bbox': [-73.96836678035541,
40.61305976667942,
-73.96836678035541,
40.61305976667942],
'borough': 'Brooklyn',
'name': 'Ocean Parkway',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.03197914537984, 40.61476812694226],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.100',
'properties': {'annoangle': 0.0,
```

```
'annoline1': 'Fort',
'annoline2': 'Hamilton',
'annoline3': None,
'bbox': [-74.03197914537984,
40.61476812694226,
-74.03197914537984,
40.61476812694226],
'borough': 'Brooklyn',
'name': 'Fort Hamilton',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99427936255978, 40.71561842231432],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.101',
'properties': {'annoangle': 0.0,
'annoline1': 'Chinatown',
'annoline2': None,
'annoline3': None,
'bbox': [-73.99427936255978,
40.71561842231432,
-73.99427936255978,
40.71561842231432],
'borough': 'Manhattan',
'name': 'Chinatown',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93690027985234, 40.85190252555305],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.102',
'properties': {'annoangle': 0.0,
'annoline1': 'Washington',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.93690027985234,
40.85190252555305,
-73.93690027985234,
40.85190252555305],
'borough': 'Manhattan',
'name': 'Washington Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.92121042203897, 40.86768396449915],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.103',
'properties': {'annoangle': 0.0,
'annoline1': 'Inwood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.92121042203897,
40.86768396449915,
-73.92121042203897,
40.86768396449915],
'borough': 'Manhattan',
'name': 'Inwood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.94968791883366, 40.823604284811935],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.104',
'properties': {'annoangle': 0.0,
'annoline1': 'Hamilton',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.94968791883366,
40.823604284811935,
-73.94968791883366,
40.823604284811935],
'borough': 'Manhattan',
'name': 'Hamilton Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9573853935188, 40.8169344294978],
'type': 'Point'},
```

```

--
'geometry_name': 'geom',
'id': 'nyu_2451_34572.105',
'properties': {'annoangle': 0.0,
'annoline1': 'Manhattanville',
'annoline2': None,
'annoline3': None,
'bbox': [-73.9573853935188,
40.8169344294978,
-73.9573853935188,
40.8169344294978],
'borough': 'Manhattan',
'name': 'Manhattanville',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.94321112603905, 40.81597606742414],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.106',
'properties': {'annoangle': 0.0,
'annoline1': 'Central',
'annoline2': 'Harlem',
'annoline3': None,
'bbox': [-73.94321112603905,
40.81597606742414,
-73.94321112603905,
40.81597606742414],
'borough': 'Manhattan',
'name': 'Central Harlem',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.94418223148524, 40.79224946663033],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.107',
'properties': {'annoangle': 0.0,
'annoline1': 'East',
'annoline2': 'Harlem',
'annoline3': None,
'bbox': [-73.94418223148524,
40.79224946663033,
-73.94418223148524,
40.79224946663033],
'borough': 'Manhattan',
'name': 'East Harlem',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96050763135, 40.775638573301805],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.108',
'properties': {'annoangle': 0.0,
'annoline1': 'Upper',
'annoline2': 'East',
'annoline3': 'Side',
'bbox': [-73.96050763135,
40.775638573301805,
-73.96050763135,
40.775638573301805],
'borough': 'Manhattan',
'name': 'Upper East Side',
'stacked': 3},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.94711784471826, 40.775929849884875],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.109',
'properties': {'annoangle': 0.0,
'annoline1': 'Yorkville',
'annoline2': None,
'annoline3': None,
'bbox': [-73.94711784471826,
40.775929849884875,
-73.94711784471826,
40.775929849884875],
'borough': 'Manhattan',
'name': 'Yorkville',
'stacked': 1},

```



```
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9588596881376, 40.76811265828733],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.110',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Lenox',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-73.9588596881376,
      40.76811265828733,
      -73.9588596881376,
      40.76811265828733],
    'borough': 'Manhattan',
    'name': 'Lenox Hill',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.94916769227953, 40.76215960576283],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.111',
  'properties': {'annoangle': 56,
    'annoline1': 'Roosevelt Island',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.94916769227953,
      40.76215960576283,
      -73.94916769227953,
      40.76215960576283],
    'borough': 'Manhattan',
    'name': 'Roosevelt Island',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.97705923630603, 40.787657998534854],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.112',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Upper',
    'annoline2': 'West',
    'annoline3': 'Side',
    'bbox': [-73.97705923630603,
      40.787657998534854,
      -73.97705923630603,
      40.787657998534854],
    'borough': 'Manhattan',
    'name': 'Upper West Side',
    'stacked': 3},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.98533777001262, 40.77352888942166],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.113',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Lincoln',
    'annoline2': 'Square',
    'annoline3': None,
    'bbox': [-73.98533777001262,
      40.77352888942166,
      -73.98533777001262,
      40.77352888942166],
    'borough': 'Manhattan',
    'name': 'Lincoln Square',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.99611936309479, 40.75910089146212],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.114',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Clinton',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.99611936309479,
      40.75910089146212,
      -73.99611936309479,
      40.75910089146212],
```

```
'borough': 'Manhattan',
'name': 'Clinton',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98166882730304, 40.75469110270623],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.115',
'properties': {'annoangle': 0.0,
'annoline1': 'Midtown',
'annoline2': None,
'annoline3': None,
'bbox': [-73.98166882730304,
40.75469110270623,
-73.98166882730304,
40.75469110270623],
'borough': 'Manhattan',
'name': 'Midtown',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.97833207924127, 40.748303077252174],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.116',
'properties': {'annoangle': 0.0,
'annoline1': 'Murray',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.97833207924127,
40.748303077252174,
-73.97833207924127,
40.748303077252174],
'borough': 'Manhattan',
'name': 'Murray Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.00311633472813, 40.744034706747975],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.117',
'properties': {'annoangle': 0.0,
'annoline1': 'Chelsea',
'annoline2': None,
'annoline3': None,
'bbox': [-74.00311633472813,
40.744034706747975,
-74.00311633472813,
40.744034706747975],
'borough': 'Manhattan',
'name': 'Chelsea',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99991402945902, 40.72693288536128],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.118',
'properties': {'annoangle': 0.0,
'annoline1': 'Greenwich',
'annoline2': 'Village',
'annoline3': None,
'bbox': [-73.99991402945902,
40.72693288536128,
-73.99991402945902,
40.72693288536128],
'borough': 'Manhattan',
'name': 'Greenwich Village',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98222616506416, 40.727846777270244],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.119',
'properties': {'annoangle': 0.0,
'annoline1': 'East',
'annoline2': 'Village',
'annoline3': None,
'bbox': [-73.98222616506416,
```

```

    'geometry': {'coordinates': [40.727846777270244,
    -73.98222616506416,
    40.727846777270244]},
    'borough': 'Manhattan',
    'name': 'East Village',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.98089031999291, 40.71780674892765],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.120',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Lower',
    'annoline2': 'East',
    'annoline3': 'Side',
    'bbox': [-73.98089031999291,
    40.71780674892765,
    -73.98089031999291,
    40.71780674892765]},
    'borough': 'Manhattan',
    'name': 'Lower East Side',
    'stacked': 3},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.01068328559087, 40.721521967443216],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.121',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Tribeca',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.01068328559087,
    40.721521967443216,
    -74.01068328559087,
    40.721521967443216]},
    'borough': 'Manhattan',
    'name': 'Tribeca',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.99730467208073, 40.71932379395907],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.122',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Little',
    'annoline2': 'Italy',
    'annoline3': None,
    'bbox': [-73.99730467208073,
    40.71932379395907,
    -73.99730467208073,
    40.71932379395907]},
    'borough': 'Manhattan',
    'name': 'Little Italy',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.00065666959759, 40.72218384131794],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.123',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Soho',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.00065666959759,
    40.72218384131794,
    -74.00065666959759,
    40.72218384131794]},
    'borough': 'Manhattan',
    'name': 'Soho',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.00617998126812, 40.73443393572434],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.124',
    'properties': {'annoangle': 0.0,
    'annoline1': 'West'

```

```

    'annoline1': 'None',
    'annoline2': 'Village',
    'annoline3': None,
    'bbox': [-74.00617998126812,
    40.73443393572434,
    -74.00617998126812,
    40.73443393572434],
    'borough': 'Manhattan',
    'name': 'West Village',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.96428617740655, 40.797307041702865],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.125',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Manhattan',
    'annoline2': 'Valley',
    'annoline3': None,
    'bbox': [-73.96428617740655,
    40.797307041702865,
    -73.96428617740655,
    40.797307041702865],
    'borough': 'Manhattan',
    'name': 'Manhattan Valley',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.96389627905332, 40.807999738165826],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.126',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Morningside',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-73.96389627905332,
    40.807999738165826,
    -73.96389627905332,
    40.807999738165826],
    'borough': 'Manhattan',
    'name': 'Morningside Heights',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.98137594833541, 40.737209832715],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.127',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Gramercy',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.98137594833541,
    40.737209832715,
    -73.98137594833541,
    40.737209832715],
    'borough': 'Manhattan',
    'name': 'Gramercy',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.01686930508617, 40.71193198394565],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.128',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Battery',
    'annoline2': 'Park',
    'annoline3': 'City',
    'bbox': [-74.01686930508617,
    40.71193198394565,
    -74.01686930508617,
    40.71193198394565],
    'borough': 'Manhattan',
    'name': 'Battery Park City',
    'stacked': 3},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.0106654452127, 40.70710710727048],
    'type': 'Point'},
    'geometry_name': 'geom'

```

```

    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.129',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Financial',
    'annoline2': 'District',
    'annoline3': None,
    'bbox': [-74.0106654452127,
    40.70710710727048,
    -74.0106654452127,
    40.70710710727048],
    'borough': 'Manhattan',
    'name': 'Financial District',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.91565374304234, 40.76850859335492],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.130',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Astoria',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.91565374304234,
    40.76850859335492,
    -73.91565374304234,
    40.76850859335492],
    'borough': 'Queens',
    'name': 'Astoria',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.90184166838284, 40.74634908860222],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.131',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Woodside',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.90184166838284,
    40.74634908860222,
    -73.90184166838284,
    40.74634908860222],
    'borough': 'Queens',
    'name': 'Woodside',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.88282109164365, 40.75198138007367],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.132',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Jackson',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-73.88282109164365,
    40.75198138007367,
    -73.88282109164365,
    40.75198138007367],
    'borough': 'Queens',
    'name': 'Jackson Heights',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.88165622288388, 40.744048505122024],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.133',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Elmhurst',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.88165622288388,
    40.744048505122024,
    -73.88165622288388,
    40.744048505122024],
    'borough': 'Queens',
    'name': 'Elmhurst',
    'stacked': 1},
    'type': 'Feature'}

```

```

    type: 'Feature',
  { 'geometry': { 'coordinates': [-73.8381376460028, 40.65422527738487],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.134',
    'properties': { 'annoangle': 0.0,
      'annoline1': 'Howard',
      'annoline2': 'Beach',
      'annoline3': None,
      'bbox': [-73.8381376460028,
        40.65422527738487,
        -73.8381376460028,
        40.65422527738487],
      'borough': 'Queens',
      'name': 'Howard Beach',
      'stacked': 2},
    'type': 'Feature'},
  { 'geometry': { 'coordinates': [-73.85682497345258, 40.74238175015667],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.135',
    'properties': { 'annoangle': 0.0,
      'annoline1': 'Corona',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.85682497345258,
        40.74238175015667,
        -73.85682497345258,
        40.74238175015667],
      'borough': 'Queens',
      'name': 'Corona',
      'stacked': 1},
    'type': 'Feature'},
  { 'geometry': { 'coordinates': [-73.84447500788983, 40.72526378216503],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.136',
    'properties': { 'annoangle': 0.0,
      'annoline1': 'Forest',
      'annoline2': 'Hills',
      'annoline3': None,
      'bbox': [-73.84447500788983,
        40.72526378216503,
        -73.84447500788983,
        40.72526378216503],
      'borough': 'Queens',
      'name': 'Forest Hills',
      'stacked': 2},
    'type': 'Feature'},
  { 'geometry': { 'coordinates': [-73.82981905825703, 40.7051790354148],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.137',
    'properties': { 'annoangle': 0.0,
      'annoline1': 'Kew',
      'annoline2': 'Gardens',
      'annoline3': None,
      'bbox': [-73.82981905825703,
        40.7051790354148,
        -73.82981905825703,
        40.7051790354148],
      'borough': 'Queens',
      'name': 'Kew Gardens',
      'stacked': 2},
    'type': 'Feature'},
  { 'geometry': { 'coordinates': [-73.83183321446887, 40.69794731471763],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.138',
    'properties': { 'annoangle': 0.0,
      'annoline1': 'Richmond',
      'annoline2': 'Hill',
      'annoline3': None,
      'bbox': [-73.83183321446887,
        40.69794731471763,
        -73.83183321446887,
        40.69794731471763],
      'borough': 'Queens'

```

```

    'borough': 'Queens',
    'name': 'Richmond Hill',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.83177300329582, 40.76445419697846],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.139',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Flushing',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.83177300329582,
      40.76445419697846,
      -73.83177300329582,
      40.76445419697846],
    'borough': 'Queens',
    'name': 'Flushing',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.93920223915505, 40.75021734610528],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.140',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Long',
    'annoline2': 'Island',
    'annoline3': 'City',
    'bbox': [-73.93920223915505,
      40.75021734610528,
      -73.93920223915505,
      40.75021734610528],
    'borough': 'Queens',
    'name': 'Long Island City',
    'stacked': 3},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.92691617561577, 40.74017628351924],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.141',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Sunnyside',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.92691617561577,
      40.74017628351924,
      -73.92691617561577,
      40.74017628351924],
    'borough': 'Queens',
    'name': 'Sunnyside',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.86704147658772, 40.76407323883091],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.142',
  'properties': {'annoangle': 0.0,
    'annoline1': 'East',
    'annoline2': 'Elmhurst',
    'annoline3': None,
    'bbox': [-73.86704147658772,
      40.76407323883091,
      -73.86704147658772,
      40.76407323883091],
    'borough': 'Queens',
    'name': 'East Elmhurst',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.89621713626859, 40.725427374093606],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.143',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Maspeth',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.89621713626859,
      40.725427374093606,
      -73.89621713626859,
      40.725427374093606],
    'borough': 'Queens',
    'name': 'Maspeth',
    'stacked': 1},
    'type': 'Feature'}

```

```

40.725427374093606,
-73.89621713626859,
40.725427374093606],
'borough': 'Queens',
'name': 'Maspeth',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90143517559589, 40.70832315613858],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.144',
'properties': {'annoangle': 0.0,
'annoline1': 'Ridgewood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90143517559589,
40.70832315613858,
-73.90143517559589,
40.70832315613858],
'borough': 'Queens',
'name': 'Ridgewood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.87074167435605, 40.70276242967838],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.145',
'properties': {'annoangle': 0.0,
'annoline1': 'Glendale',
'annoline2': None,
'annoline3': None,
'bbox': [-73.87074167435605,
40.70276242967838,
-73.87074167435605,
40.70276242967838],
'borough': 'Queens',
'name': 'Glendale',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8578268690537, 40.72897409480735],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.146',
'properties': {'annoangle': 0.0,
'annoline1': 'Rego Park',
'annoline2': None,
'annoline3': None,
'bbox': [-73.8578268690537,
40.72897409480735,
-73.8578268690537,
40.72897409480735],
'borough': 'Queens',
'name': 'Rego Park',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8581104655432, 40.68988687915789],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.147',
'properties': {'annoangle': 0.0,
'annoline1': 'Woodhaven',
'annoline2': None,
'annoline3': None,
'bbox': [-73.8581104655432,
40.68988687915789,
-73.8581104655432,
40.68988687915789],
'borough': 'Queens',
'name': 'Woodhaven',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84320266173447, 40.680708468265415],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.148',
'properties': {'annoangle': 0.0,
'annoline1': 'Ozone Park',

```



```

'annoline2': None,
'annoline3': None,
'bbox': [-73.84320266173447,
40.680708468265415,
-73.84320266173447,
40.680708468265415],
'borough': 'Queens',
'name': 'Ozone Park',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.80986478649041, 40.66854957767195],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.149',
'properties': {'annoangle': 0.0,
'annoline1': 'South',
'annoline2': 'Ozone Park',
'annoline3': None,
'bbox': [-73.80986478649041,
40.66854957767195,
-73.80986478649041,
40.66854957767195],
'borough': 'Queens',
'name': 'South Ozone Park',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84304528896125, 40.784902749260205],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.150',
'properties': {'annoangle': 0.0,
'annoline1': 'College',
'annoline2': 'Point',
'annoline3': None,
'bbox': [-73.84304528896125,
40.784902749260205,
-73.84304528896125,
40.784902749260205],
'borough': 'Queens',
'name': 'College Point',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.81420216610863, 40.78129076602694],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.151',
'properties': {'annoangle': 0.0,
'annoline1': 'Whitestone',
'annoline2': None,
'annoline3': None,
'bbox': [-73.81420216610863,
40.78129076602694,
-73.81420216610863,
40.78129076602694],
'borough': 'Queens',
'name': 'Whitestone',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.7742736306867, 40.76604063281064],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.152',
'properties': {'annoangle': 0.0,
'annoline1': 'Bayside',
'annoline2': None,
'annoline3': None,
'bbox': [-73.7742736306867,
40.76604063281064,
-73.7742736306867,
40.76604063281064],
'borough': 'Queens',
'name': 'Bayside',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.79176243728061, 40.76172954903262],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.153',
'properties': {'annoangle': 0.0,
'annoline1': 'Bayside',
'annoline2': None,
'annoline3': None,
'bbox': [-73.79176243728061,
40.76172954903262,
-73.79176243728061,
40.76172954903262],
'borough': 'Queens',
'name': 'Bayside',
'stacked': 1},
'type': 'Feature'}],
'bbox': [-73.84320266173447, 40.680708468265415, -73.79176243728061, 40.76172954903262],
'crs': {'type': 'crs', 'properties': {'type': 'name', 'value': 'urn:ogc:def:crs:EPSG::31466'}},
'type': 'FeatureCollection',
'bbox': [-73.84320266173447, 40.680708468265415, -73.79176243728061, 40.76172954903262]}

```

```
'id': 'nyu_2451_34572.153',
'properties': {'annoangle': 0.0,
'annoline1': 'Auburndale',
'annoline2': None,
'annoline3': None,
'bbox': [-73.79176243728061,
40.76172954903262,
-73.79176243728061,
40.76172954903262]},
'borough': 'Queens',
'name': 'Auburndale',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.7388977558074, 40.7708261928267],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.154',
'properties': {'annoangle': 0.0,
'annoline1': 'Little',
'annoline2': 'Neck',
'annoline3': None,
'bbox': [-73.7388977558074,
40.7708261928267,
-73.7388977558074,
40.7708261928267]},
'borough': 'Queens',
'name': 'Little Neck',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.7424982072733, 40.76684609790763],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.155',
'properties': {'annoangle': 0.0,
'annoline1': 'Douglaston',
'annoline2': None,
'annoline3': None,
'bbox': [-73.7424982072733,
40.76684609790763,
-73.7424982072733,
40.76684609790763]},
'borough': 'Queens',
'name': 'Douglaston',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.71548118999145, 40.74944079974332],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.156',
'properties': {'annoangle': 0.0,
'annoline1': 'Glen',
'annoline2': 'Oaks',
'annoline3': None,
'bbox': [-73.71548118999145,
40.74944079974332,
-73.71548118999145,
40.74944079974332]},
'borough': 'Queens',
'name': 'Glen Oaks',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.72012814826903, 40.72857318176675],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.157',
'properties': {'annoangle': 0.0,
'annoline1': 'Bellerose',
'annoline2': None,
'annoline3': None,
'bbox': [-73.72012814826903,
40.72857318176675,
-73.72012814826903,
40.72857318176675]},
'borough': 'Queens',
'name': 'Bellerose',
'stacked': 1},
'type': 'Feature'},
```

```
{'geometry': {'coordinates': [-73.82087764933566, 40.722578244228046],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.158',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Kew',
    'annoline2': 'Gardens',
    'annoline3': 'Hills',
    'bbox': [-73.82087764933566,
      40.722578244228046,
      -73.82087764933566,
      40.722578244228046],
    'borough': 'Queens',
    'name': 'Kew Gardens Hills',
    'stacked': 3},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.78271337003264, 40.7343944653313],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.159',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Fresh',
    'annoline2': 'Meadows',
    'annoline3': None,
    'bbox': [-73.78271337003264,
      40.7343944653313,
      -73.78271337003264,
      40.7343944653313],
    'borough': 'Queens',
    'name': 'Fresh Meadows',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.81174822458634, 40.71093547252271],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.160',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Briarwood',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.81174822458634,
      40.71093547252271,
      -73.81174822458634,
      40.71093547252271],
    'borough': 'Queens',
    'name': 'Briarwood',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.79690165888289, 40.70465736068717],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.161',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Jamaica',
    'annoline2': 'Center',
    'annoline3': None,
    'bbox': [-73.79690165888289,
      40.70465736068717,
      -73.79690165888289,
      40.70465736068717],
    'borough': 'Queens',
    'name': 'Jamaica Center',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-73.75494976234332, 40.74561857141855],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.162',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Oakland',
    'annoline2': 'Gardens',
    'annoline3': None,
    'bbox': [-73.75494976234332,
      40.74561857141855,
      -73.75494976234332,
      40.74561857141855],
    'borough': 'Queens',
```

```
'name': 'Oakland Gardens',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.73871484578424, 40.718893092167356],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.163',
'properties': {'annoangle': 0.0,
'annoline1': 'Queens',
'annoline2': 'Village',
'annoline3': None,
'bbox': [-73.73871484578424,
40.718893092167356,
-73.73871484578424,
40.718893092167356],
'borough': 'Queens',
'name': 'Queens Village',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.75925009335594, 40.71124344191904],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.164',
'properties': {'annoangle': 0.0,
'annoline1': 'Hollis',
'annoline2': None,
'annoline3': None,
'bbox': [-73.75925009335594,
40.71124344191904,
-73.75925009335594,
40.71124344191904],
'borough': 'Queens',
'name': 'Hollis',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.7904261313554, 40.696911253789885],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.165',
'properties': {'annoangle': 0.0,
'annoline1': 'South Jamaica',
'annoline2': None,
'annoline3': None,
'bbox': [-73.7904261313554,
40.696911253789885,
-73.7904261313554,
40.696911253789885],
'borough': 'Queens',
'name': 'South Jamaica',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.75867603727717, 40.69444538522359],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.166',
'properties': {'annoangle': 0.0,
'annoline1': 'St. Albans',
'annoline2': None,
'annoline3': None,
'bbox': [-73.75867603727717,
40.69444538522359,
-73.75867603727717,
40.69444538522359],
'borough': 'Queens',
'name': 'St. Albans',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.77258787620906, 40.67521139591733],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.167',
'properties': {'annoangle': 0.0,
'annoline1': 'Rochdale',
'annoline2': None,
'annoline3': None,
'bbox': [-73.77258787620906,
40.67521139591733,
```

```

-73.77258787620906,
40.67521139591733],
'borough': 'Queens',
'name': 'Rochdale',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.76042092682287, 40.666230490368584],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.168',
'properties': {'annoangle': 0.0,
'annoline1': 'Springfield',
'annoline2': 'Gardens',
'annoline3': None,
'bbox': [-73.76042092682287,
40.666230490368584,
-73.76042092682287,
40.666230490368584],
'borough': 'Queens',
'name': 'Springfield Gardens',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.73526873708026, 40.692774639160845],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.169',
'properties': {'annoangle': 0.0,
'annoline1': 'Cambria',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.73526873708026,
40.692774639160845,
-73.73526873708026,
40.692774639160845],
'borough': 'Queens',
'name': 'Cambria Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.73526079428278, 40.659816433428084],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.170',
'properties': {'annoangle': 0.0,
'annoline1': 'Rosedale',
'annoline2': None,
'annoline3': None,
'bbox': [-73.73526079428278,
40.659816433428084,
-73.73526079428278,
40.659816433428084],
'borough': 'Queens',
'name': 'Rosedale',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.75497968043872, 40.603134432500894],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.171',
'properties': {'annoangle': 0.0,
'annoline1': 'Far Rockaway',
'annoline2': None,
'annoline3': None,
'bbox': [-73.75497968043872,
40.603134432500894,
-73.75497968043872,
40.603134432500894],
'borough': 'Queens',
'name': 'Far Rockaway',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8200548911032, 40.60302658351238],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.172',
'properties': {'annoangle': 0.0,
'annoline1': 'Broad',
'annoline2': 'Channel',

```

```
'annoline3': None,
'bbox': [-73.8200548911032,
40.60302658351238,
-73.8200548911032,
40.60302658351238],
'borough': 'Queens',
'name': 'Broad Channel',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.92551196994168, 40.55740128845452],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.173',
'properties': {'annoangle': 0.0,
'annoline1': 'Breezy',
'annoline2': 'Point',
'annoline3': None,
'bbox': [-73.92551196994168,
40.55740128845452,
-73.92551196994168,
40.55740128845452],
'borough': 'Queens',
'name': 'Breezy Point',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90228960391673, 40.775923015642896],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.174',
'properties': {'annoangle': 0.0,
'annoline1': 'Steinway',
'annoline2': None,
'annoline3': None,
'bbox': [-73.90228960391673,
40.775923015642896,
-73.90228960391673,
40.775923015642896],
'borough': 'Queens',
'name': 'Steinway',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.80436451720988, 40.79278140360048],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.175',
'properties': {'annoangle': 0.0,
'annoline1': 'Beechhurst',
'annoline2': None,
'annoline3': None,
'bbox': [-73.80436451720988,
40.79278140360048,
-73.80436451720988,
40.79278140360048],
'borough': 'Queens',
'name': 'Beechhurst',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.7768022262158, 40.782842806245554],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.176',
'properties': {'annoangle': 0.0,
'annoline1': 'Bay',
'annoline2': 'Terrace',
'annoline3': None,
'bbox': [-73.7768022262158,
40.782842806245554,
-73.7768022262158,
40.782842806245554],
'borough': 'Queens',
'name': 'Bay Terrace',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.77613282391705, 40.595641807368494],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.177',
```

```

'properties': {'annoangle': 0.0,
'annoline1': 'Edgemere',
'annoline2': None,
'annoline3': None,
'bbox': [-73.77613282391705,
40.595641807368494,
-73.77613282391705,
40.595641807368494],
'borough': 'Queens',
'name': 'Edgemere',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.79199233136943, 40.58914394372971],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.178',
'properties': {'annoangle': 0.0,
'annoline1': 'Arverne',
'annoline2': None,
'annoline3': None,
'bbox': [-73.79199233136943,
40.58914394372971,
-73.79199233136943,
40.58914394372971],
'borough': 'Queens',
'name': 'Arverne',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.82236121088751, 40.582801696845586],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.179',
'properties': {'annoangle': 0.0,
'annoline1': 'Rockaway',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-73.82236121088751,
40.582801696845586,
-73.82236121088751,
40.582801696845586],
'borough': 'Queens',
'name': 'Rockaway Beach',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.85754672410827, 40.572036730217015],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.180',
'properties': {'annoangle': 0.0,
'annoline1': 'Neponsit',
'annoline2': None,
'annoline3': None,
'bbox': [-73.85754672410827,
40.572036730217015,
-73.85754672410827,
40.572036730217015],
'borough': 'Queens',
'name': 'Neponsit',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.81276269135866, 40.764126122614066],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.181',
'properties': {'annoangle': 0.0,
'annoline1': 'Murray',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.81276269135866,
40.764126122614066,
-73.81276269135866,
40.764126122614066],
'borough': 'Queens',
'name': 'Murray Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.70884705889246, 40.741378421945434],

```

```

    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.182',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Floral Park',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.70884705889246,
    40.741378421945434,
    -73.70884705889246,
    40.741378421945434],
    'borough': 'Queens',
    'name': 'Floral Park',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.76714166714729, 40.7209572076444],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.183',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Holliswood',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.76714166714729,
    40.7209572076444,
    -73.76714166714729,
    40.7209572076444],
    'borough': 'Queens',
    'name': 'Holliswood',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.7872269693666, 40.71680483014613],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.184',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Jamaica',
    'annoline2': 'Estates',
    'annoline3': None,
    'bbox': [-73.7872269693666,
    40.71680483014613,
    -73.7872269693666,
    40.71680483014613],
    'borough': 'Queens',
    'name': 'Jamaica Estates',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.82580915110559, 40.7445723092867],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.185',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Queensboro',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-73.82580915110559,
    40.7445723092867,
    -73.82580915110559,
    40.7445723092867],
    'borough': 'Queens',
    'name': 'Queensboro Hill',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.79760300912672, 40.723824901829204],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.186',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Hillcrest',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.79760300912672,
    40.723824901829204,
    -73.79760300912672,
    40.723824901829204],
    'borough': 'Queens',
    'name': 'Hillcrest',

```



```
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93157506072878, 40.761704526054146],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.187',
'properties': {'annoangle': 0.0,
'annoline1': 'Ravenswood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.93157506072878,
40.761704526054146,
-73.93157506072878,
40.761704526054146],
'borough': 'Queens',
'name': 'Ravenswood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.84963782402441, 40.66391841925139],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.188',
'properties': {'annoangle': 0.0,
'annoline1': 'Lindenwood',
'annoline2': None,
'annoline3': None,
'bbox': [-73.84963782402441,
40.66391841925139,
-73.84963782402441,
40.66391841925139],
'borough': 'Queens',
'name': 'Lindenwood',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.74025607989822, 40.66788389660247],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.189',
'properties': {'annoangle': 0.0,
'annoline1': 'Laurelton',
'annoline2': None,
'annoline3': None,
'bbox': [-73.74025607989822,
40.66788389660247,
-73.74025607989822,
40.66788389660247],
'borough': 'Queens',
'name': 'Laurelton',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8625247141374, 40.736074570830795],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.190',
'properties': {'annoangle': 0.0,
'annoline1': 'Lefrak',
'annoline2': 'City',
'annoline3': None,
'bbox': [-73.8625247141374,
40.736074570830795,
-73.8625247141374,
40.736074570830795],
'borough': 'Queens',
'name': 'Lefrak City',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8540175039252, 40.57615556543109],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.191',
'properties': {'annoangle': 0.0,
'annoline1': 'Belle Harbor',
'annoline2': None,
'annoline3': None,
'bbox': [-73.8540175039252,
40.57615556543109,
-73.8540175039252,
```

```

    40.57615556543109],
    'borough': 'Queens',
    'name': 'Belle Harbor',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.84153370226186, 40.58034295646131],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.192',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Rockaway Park',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.84153370226186,
        40.58034295646131,
        -73.84153370226186,
        40.58034295646131],
      'borough': 'Queens',
      'name': 'Rockaway Park',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.79664750844047, 40.59771061565768],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.193',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Somerville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.79664750844047,
        40.59771061565768,
        -73.79664750844047,
        40.59771061565768],
      'borough': 'Queens',
      'name': 'Somerville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.75175310731153, 40.66000322733613],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.194',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Brookville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.75175310731153,
        40.66000322733613,
        -73.75175310731153,
        40.66000322733613],
      'borough': 'Queens',
      'name': 'Brookville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.73889198912481, 40.73301404027834],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.195',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Bellaire',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.73889198912481,
        40.73301404027834,
        -73.73889198912481,
        40.73301404027834],
      'borough': 'Queens',
      'name': 'Bellaire',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.85751790676447, 40.7540709990489],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.196',
    'properties': {'annoangle': 0.0,
      'annoline1': 'North',
      'annoline2': 'Corona',
      'annoline3': None,

```

```

'bbox': [-73.85751790676447,
40.7540709990489,
-73.85751790676447,
40.7540709990489],
'borough': 'Queens',
'name': 'North Corona',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.8410221123401, 40.7146110815117],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.197',
'properties': {'annoangle': 0.0,
'annoline1': 'Forest',
'annoline2': 'Hills',
'annoline3': 'Gardens',
'bbox': [-73.8410221123401,
40.7146110815117,
-73.8410221123401,
40.7146110815117],
'borough': 'Queens',
'name': 'Forest Hills Gardens',
'stacked': 3},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.07935312512797, 40.6449815710044],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.198',
'properties': {'annoangle': 0.0,
'annoline1': 'St.',
'annoline2': 'George',
'annoline3': None,
'bbox': [-74.07935312512797,
40.6449815710044,
-74.07935312512797,
40.6449815710044],
'borough': 'Staten Island',
'name': 'St. George',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.08701650516625, 40.64061455913511],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.199',
'properties': {'annoangle': 0.0,
'annoline1': 'New',
'annoline2': 'Brighton',
'annoline3': None,
'bbox': [-74.08701650516625,
40.64061455913511,
-74.08701650516625,
40.64061455913511],
'borough': 'Staten Island',
'name': 'New Brighton',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.07790192660066, 40.62692762538176],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.200',
'properties': {'annoangle': 0.0,
'annoline1': 'Stapleton',
'annoline2': None,
'annoline3': None,
'bbox': [-74.07790192660066,
40.62692762538176,
-74.07790192660066,
40.62692762538176],
'borough': 'Staten Island',
'name': 'Stapleton',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.06980526716141, 40.61530494652761],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.201',
'properties': {'annoangle': 0.0.

```

```

    'annoline1': 'Rosebank',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.06980526716141,
    40.61530494652761,
    -74.06980526716141,
    40.61530494652761],
    'borough': 'Staten Island',
    'name': 'Rosebank',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.1071817826561, 40.63187892654607],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.202',
    'properties': {'annoangle': 0.0,
    'annoline1': 'West',
    'annoline2': 'Brighton',
    'annoline3': None,
    'bbox': [-74.1071817826561,
    40.63187892654607,
    -74.1071817826561,
    40.63187892654607],
    'borough': 'Staten Island',
    'name': 'West Brighton',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.08724819983729, 40.624184791313006],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.203',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Grymes',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-74.08724819983729,
    40.624184791313006,
    -74.08724819983729,
    40.624184791313006],
    'borough': 'Staten Island',
    'name': 'Grymes Hill',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.1113288180088, 40.59706851814673],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.204',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Todt',
    'annoline2': 'Hill',
    'annoline3': None,
    'bbox': [-74.1113288180088,
    40.59706851814673,
    -74.1113288180088,
    40.59706851814673],
    'borough': 'Staten Island',
    'name': 'Todt Hill',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.0795529253982, 40.58024741350956],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.205',
    'properties': {'annoangle': 0.0,
    'annoline1': 'South',
    'annoline2': 'Beach',
    'annoline3': None,
    'bbox': [-74.0795529253982,
    40.58024741350956,
    -74.0795529253982,
    40.58024741350956],
    'borough': 'Staten Island',
    'name': 'South Beach',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.12943426797008, 40.63366930554365],
    'type': 'Point'},

```

```

    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.206',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Port',
    'annoline2': 'Richmond',
    'annoline3': None,
    'bbox': [-74.12943426797008,
    40.63366930554365,
    -74.12943426797008,
    40.63366930554365],
    'borough': 'Staten Island',
    'name': 'Port Richmond',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-74.15008537046981, 40.632546390481124],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.207',
    'properties': {'annoangle': 0.0,
    'annoline1': "Mariner's",
    'annoline2': 'Harbor',
    'annoline3': None,
    'bbox': [-74.15008537046981,
    40.632546390481124,
    -74.15008537046981,
    40.632546390481124],
    'borough': 'Staten Island',
    'name': "Mariner's Harbor",
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-74.17464532993542, 40.63968297845542],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.208',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Port',
    'annoline2': 'Ivory',
    'annoline3': None,
    'bbox': [-74.17464532993542,
    40.63968297845542,
    -74.17464532993542,
    40.63968297845542],
    'borough': 'Staten Island',
    'name': 'Port Ivory',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-74.11918058534842, 40.61333593766742],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.209',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Castleton',
    'annoline2': 'Corners',
    'annoline3': None,
    'bbox': [-74.11918058534842,
    40.61333593766742,
    -74.11918058534842,
    40.61333593766742],
    'borough': 'Staten Island',
    'name': 'Castleton Corners',
    'stacked': 2},
    'type': 'Feature'},
    {'geometry': {'coordinates': [-74.16496031329827, 40.594252379161695],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.210',
    'properties': {'annoangle': 0.0,
    'annoline1': 'New',
    'annoline2': 'Springville',
    'annoline3': None,
    'bbox': [-74.16496031329827,
    40.594252379161695,
    -74.16496031329827,
    40.594252379161695],
    'borough': 'Staten Island',
    'name': 'New Springville',
    'stacked': 2}
  ]

```

```

    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.19073717538116, 40.58631375103281],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.211',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Travis',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.19073717538116,
      40.58631375103281,
      -74.19073717538116,
      40.58631375103281],
    'borough': 'Staten Island',
    'name': 'Travis',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.1164794360638, 40.57257231820632],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.212',
  'properties': {'annoangle': 0.0,
    'annoline1': 'New',
    'annoline2': 'Dorp',
    'annoline3': None,
    'bbox': [-74.1164794360638,
      40.57257231820632,
      -74.1164794360638,
      40.57257231820632],
    'borough': 'Staten Island',
    'name': 'New Dorp',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.12156593771896, 40.5584622432888],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.213',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Oakwood',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.12156593771896,
      40.5584622432888,
      -74.12156593771896,
      40.5584622432888],
    'borough': 'Staten Island',
    'name': 'Oakwood',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.14932381490992, 40.549480228713605],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.214',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Great',
    'annoline2': 'Kills',
    'annoline3': None,
    'bbox': [-74.14932381490992,
      40.549480228713605,
      -74.14932381490992,
      40.549480228713605],
    'borough': 'Staten Island',
    'name': 'Great Kills',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.1643308041936, 40.542230747450745],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.215',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Eltingville',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.1643308041936,
      40.542230747450745,
      -74.1643308041936,
      40.542230747450745],
    'borough': 'Staten Island',
    'name': 'Eltingville',
    'stacked': 1},
  'type': 'Feature'}],
  'bbox': [-74.19073717538116, 40.58631375103281, -74.1643308041936, 40.542230747450745],
  'crs': {'type': 'name', 'properties': {'name': 'urn:ogc:def:crs:EPSG::31433'}},
  'type': 'FeatureCollection'}
```

```

    40.54223074745074507},
    'borough': 'Staten Island',
    'name': 'Eltingville',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.17854866165878, 40.53811417474507],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.216',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Annadale',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.17854866165878,
        40.53811417474507,
        -74.17854866165878,
        40.53811417474507],
      'borough': 'Staten Island',
      'name': 'Annadale',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.20524582480326, 40.541967622888755],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.217',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Woodrow',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.20524582480326,
        40.541967622888755,
        -74.20524582480326,
        40.541967622888755],
      'borough': 'Staten Island',
      'name': 'Woodrow',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.24656934235283, 40.50533376115642],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.218',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Tottenville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.24656934235283,
        40.50533376115642,
        -74.24656934235283,
        40.50533376115642],
      'borough': 'Staten Island',
      'name': 'Tottenville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.08055351790115, 40.637316067110326],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.219',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Tompkinsville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.08055351790115,
        40.637316067110326,
        -74.08055351790115,
        40.637316067110326],
      'borough': 'Staten Island',
      'name': 'Tompkinsville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.09629029235458, 40.61919310792676],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.220',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Silver',
      'annoline2': 'Lake',
      'annoline3': None,
      'bbox': [-74.09629029235458,

```

```

    'bbox': [-74.09629029235458,
    40.61919310792676,
    -74.09629029235458,
    40.61919310792676],
    'borough': 'Staten Island',
    'name': 'Silver Lake',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.0971255217853, 40.61276015756489],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.221',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Sunnyside',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.0971255217853,
    40.61276015756489,
    -74.0971255217853,
    40.61276015756489],
    'borough': 'Staten Island',
    'name': 'Sunnyside',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.96101312466779, 40.643675183340974],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.222',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Ditmas',
    'annoline2': 'Park',
    'annoline3': None,
    'bbox': [-73.96101312466779,
    40.643675183340974,
    -73.96101312466779,
    40.643675183340974],
    'borough': 'Brooklyn',
    'name': 'Ditmas Park',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.93718680559314, 40.66094656188111],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.223',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Wingate',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.93718680559314,
    40.66094656188111,
    -73.93718680559314,
    40.66094656188111],
    'borough': 'Brooklyn',
    'name': 'Wingate',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.92688212616955, 40.655572313280764],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.224',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Rugby',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.92688212616955,
    40.655572313280764,
    -73.92688212616955,
    40.655572313280764],
    'borough': 'Brooklyn',
    'name': 'Rugby',
    'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.08015734936296, 40.60919044434558],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.225',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Park',
    'annoline2': 'Rugby',
    'annoline3': None,
    'bbox': [-74.08015734936296,
    40.60919044434558,
    -74.08015734936296,
    40.60919044434558],
    'borough': 'Brooklyn',
    'name': 'Rugby',
    'stacked': 1},
    'type': 'Feature'}]

```



```

'annoline1': 'Park',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-74.08015734936296,
40.60919044434558,
-74.08015734936296,
40.60919044434558],
'borough': 'Staten Island',
'name': 'Park Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.13304143951704, 40.62109047275409],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.226',
'properties': {'annoangle': 0.0,
'annoline1': 'Westerleigh',
'annoline2': None,
'annoline3': None,
'bbox': [-74.13304143951704,
40.62109047275409,
-74.13304143951704,
40.62109047275409],
'borough': 'Staten Island',
'name': 'Westerleigh',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.15315246387762, 40.620171512231884],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.227',
'properties': {'annoangle': 0.0,
'annoline1': 'Graniteville',
'annoline2': None,
'annoline3': None,
'bbox': [-74.15315246387762,
40.620171512231884,
-74.15315246387762,
40.620171512231884],
'borough': 'Staten Island',
'name': 'Graniteville',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.16510420241124, 40.63532509911492],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.228',
'properties': {'annoangle': 0.0,
'annoline1': 'Arlington',
'annoline2': None,
'annoline3': None,
'bbox': [-74.16510420241124,
40.63532509911492,
-74.16510420241124,
40.63532509911492],
'borough': 'Staten Island',
'name': 'Arlington',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.06712363225574, 40.596312571276734],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.229',
'properties': {'annoangle': 0.0,
'annoline1': 'Arrochar',
'annoline2': None,
'annoline3': None,
'bbox': [-74.06712363225574,
40.596312571276734,
-74.06712363225574,
40.596312571276734],
'borough': 'Staten Island',
'name': 'Arrochar',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.0766743627905, 40.59826835959991],
'type': 'Point'},

```

```

'geometry_name': 'geom',
'id': 'nyu_2451_34572.230',
'properties': {'annoangle': 0.0,
'annoline1': 'Grasmere',
'annoline2': None,
'annoline3': None,
'bbox': [-74.0766743627905,
40.59826835959991,
-74.0766743627905,
40.59826835959991]},
'borough': 'Staten Island',
'name': 'Grasmere',
'stacked': 1},
'type': 'Feature'}},
{'geometry': {'coordinates': [-74.08751118005578, 40.59632891379513],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.231',
'properties': {'annoangle': 0.0,
'annoline1': 'Old',
'annoline2': 'Town',
'annoline3': None,
'bbox': [-74.08751118005578,
40.59632891379513,
-74.08751118005578,
40.59632891379513]},
'borough': 'Staten Island',
'name': 'Old Town',
'stacked': 2},
'type': 'Feature'}},
{'geometry': {'coordinates': [-74.09639905312521, 40.588672948199275],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.232',
'properties': {'annoangle': 0.0,
'annoline1': 'Dongan',
'annoline2': 'Hills',
'annoline3': None,
'bbox': [-74.09639905312521,
40.588672948199275,
-74.09639905312521,
40.588672948199275]},
'borough': 'Staten Island',
'name': 'Dongan Hills',
'stacked': 2},
'type': 'Feature'}},
{'geometry': {'coordinates': [-74.09348266303591, 40.57352690574283],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.233',
'properties': {'annoangle': 0.0,
'annoline1': 'Midland',
'annoline2': 'Beach',
'annoline3': None,
'bbox': [-74.09348266303591,
40.57352690574283,
-74.09348266303591,
40.57352690574283]},
'borough': 'Staten Island',
'name': 'Midland Beach',
'stacked': 2},
'type': 'Feature'}},
{'geometry': {'coordinates': [-74.10585598545434, 40.57621558711788],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.234',
'properties': {'annoangle': 0.0,
'annoline1': 'Grant',
'annoline2': 'City',
'annoline3': None,
'bbox': [-74.10585598545434,
40.57621558711788,
-74.10585598545434,
40.57621558711788]},
'borough': 'Staten Island',
'name': 'Grant City',
'stacked': 2},
'type': 'Feature'}},

```

```
'type': 'Feature'},
{'geometry': {'coordinates': [-74.10432707469124, 40.56425549307335],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.235',
  'properties': {'annoangle': 0.0,
    'annoline1': 'New',
    'annoline2': 'Dorp',
    'annoline3': 'Beach',
    'bbox': [-74.10432707469124,
      40.56425549307335,
      -74.10432707469124,
      40.56425549307335],
    'borough': 'Staten Island',
    'name': 'New Dorp Beach',
    'stacked': 3},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.13916622175768, 40.55398800858462],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.236',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Bay',
    'annoline2': 'Terrace',
    'annoline3': None,
    'bbox': [-74.13916622175768,
      40.55398800858462,
      -74.13916622175768,
      40.55398800858462],
    'borough': 'Staten Island',
    'name': 'Bay Terrace',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.19174105747814, 40.531911920489605],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.237',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Huguenot',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.19174105747814,
      40.531911920489605,
      -74.19174105747814,
      40.531911920489605],
    'borough': 'Staten Island',
    'name': 'Huguenot',
    'stacked': 1},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.21983106616777, 40.524699376118136],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.238',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Pleasant',
    'annoline2': 'Plains',
    'annoline3': None,
    'bbox': [-74.21983106616777,
      40.524699376118136,
      -74.21983106616777,
      40.524699376118136],
    'borough': 'Staten Island',
    'name': 'Pleasant Plains',
    'stacked': 2},
  'type': 'Feature'},
{'geometry': {'coordinates': [-74.22950350260027, 40.50608165346305],
  'type': 'Point'},
  'geometry_name': 'geom',
  'id': 'nyu_2451_34572.239',
  'properties': {'annoangle': 0.0,
    'annoline1': 'Butler',
    'annoline2': 'Manor',
    'annoline3': None,
    'bbox': [-74.22950350260027,
      40.50608165346305,
      -74.22950350260027,
      40.50608165346305],
```

```

    'borough': 'Staten Island',
    'name': 'Butler Manor',
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.23215775896526, 40.53053148283314],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.240',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Charleston',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.23215775896526,
        40.53053148283314,
        -74.23215775896526,
        40.53053148283314],
      'borough': 'Staten Island',
      'name': 'Charleston',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.21572851113952, 40.54940400650072],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.241',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Rossville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.21572851113952,
        40.54940400650072,
        -74.21572851113952,
        40.54940400650072],
      'borough': 'Staten Island',
      'name': 'Rossville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.18588674583893, 40.54928582278321],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.242',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Arden',
      'annoline2': 'Heights',
      'annoline3': None,
      'bbox': [-74.18588674583893,
        40.54928582278321,
        -74.18588674583893,
        40.54928582278321],
      'borough': 'Staten Island',
      'name': 'Arden Heights',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.17079414786092, 40.555295236173194],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.243',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Greenridge',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.17079414786092,
        40.555295236173194,
        -74.17079414786092,
        40.555295236173194],
      'borough': 'Staten Island',
      'name': 'Greenridge',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.15902208156601, 40.58913894875281],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.244',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Heartland',
      'annoline2': 'Village',
      'annoline3': None,
      'bbox': [-74.15902208156601,

```

```

40.58913894875281,
-74.15902208156601,
40.58913894875281],
'borough': 'Staten Island',
'name': 'Heartland Village',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.1895604551969, 40.59472602746295],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.245',
'properties': {'annoangle': 0.0,
'annoline1': 'Chelsea',
'annoline2': None,
'annoline3': None,
'bbox': [-74.1895604551969,
40.59472602746295,
-74.1895604551969,
40.59472602746295],
'borough': 'Staten Island',
'name': 'Chelsea',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.18725638381567, 40.60577868452358],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.246',
'properties': {'annoangle': 0.0,
'annoline1': 'Bloomfield',
'annoline2': None,
'annoline3': None,
'bbox': [-74.18725638381567,
40.60577868452358,
-74.18725638381567,
40.60577868452358],
'borough': 'Staten Island',
'name': 'Bloomfield',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.15940948657122, 40.6095918004203],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.247',
'properties': {'annoangle': 0.0,
'annoline1': 'Bulls',
'annoline2': 'Head',
'annoline3': None,
'bbox': [-74.15940948657122,
40.6095918004203,
-74.15940948657122,
40.6095918004203],
'borough': 'Staten Island',
'name': 'Bulls Head',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.95325646837112, 40.7826825671257],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.248',
'properties': {'annoangle': 0.0,
'annoline1': 'Carnegie',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.95325646837112,
40.7826825671257,
-73.95325646837112,
40.7826825671257],
'borough': 'Manhattan',
'name': 'Carnegie Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98843368023597, 40.72325901885768],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.249',
'properties': {'annoangle': 0.0,
'annoline1': 'Noho',

```

```
'annoline2': None,
'annoline3': None,
'bbox': [-73.98843368023597,
40.72325901885768,
-73.98843368023597,
40.72325901885768],
'borough': 'Manhattan',
'name': 'Noho',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.00541529873355, 40.71522892046282],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.250',
'properties': {'annoangle': 0.0,
'annoline1': 'Civic',
'annoline2': 'Center',
'annoline3': None,
'bbox': [-74.00541529873355,
40.71522892046282,
-74.00541529873355,
40.71522892046282],
'borough': 'Manhattan',
'name': 'Civic Center',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98871313285247, 40.7485096643122],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.251',
'properties': {'annoangle': 0.0,
'annoline1': 'Midtown',
'annoline2': 'South',
'annoline3': None,
'bbox': [-73.98871313285247,
40.7485096643122,
-73.98871313285247,
40.7485096643122],
'borough': 'Manhattan',
'name': 'Midtown South',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.1340572986257, 40.56960594275505],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.252',
'properties': {'annoangle': 0.0,
'annoline1': 'Richmond',
'annoline2': 'Town',
'annoline3': None,
'bbox': [-74.1340572986257,
40.56960594275505,
-74.1340572986257,
40.56960594275505],
'borough': 'Staten Island',
'name': 'Richmond Town',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.06667766061771, 40.60971934079284],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.253',
'properties': {'annoangle': 0.0,
'annoline1': 'Shore',
'annoline2': 'Acres',
'annoline3': None,
'bbox': [-74.06667766061771,
40.60971934079284,
-74.06667766061771,
40.60971934079284],
'borough': 'Staten Island',
'name': 'Shore Acres',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.072642445484, 40.61917845202843],
'type': 'Point'},
'geometry_name': 'geom',
```

```
'id': 'nyu_2451_34572.254',
'properties': {'annoangle': 0.0,
'annoline1': 'Clifton',
'annoline2': None,
'annoline3': None,
'bbox': [-74.072642445484,
40.61917845202843,
-74.072642445484,
40.61917845202843]},
'borough': 'Staten Island',
'name': 'Clifton',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.08402364740358, 40.6044731896879],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.255',
'properties': {'annoangle': 0.0,
'annoline1': 'Concord',
'annoline2': None,
'annoline3': None,
'bbox': [-74.08402364740358,
40.6044731896879,
-74.08402364740358,
40.6044731896879]},
'borough': 'Staten Island',
'name': 'Concord',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.09776206972522, 40.606794394801],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.256',
'properties': {'annoangle': 0.0,
'annoline1': 'Emerson',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-74.09776206972522,
40.606794394801,
-74.09776206972522,
40.606794394801]},
'borough': 'Staten Island',
'name': 'Emerson Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.09805062373887, 40.63563000681151],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.257',
'properties': {'annoangle': 0.0,
'annoline1': 'Randall',
'annoline2': 'Manor',
'annoline3': None,
'bbox': [-74.09805062373887,
40.63563000681151,
-74.09805062373887,
40.63563000681151]},
'borough': 'Staten Island',
'name': 'Randall Manor',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-74.18622331749823, 40.63843283794795],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.258',
'properties': {'annoangle': 0.0,
'annoline1': 'Howland',
'annoline2': 'Hook',
'annoline3': None,
'bbox': [-74.18622331749823,
40.63843283794795,
-74.18622331749823,
40.63843283794795]},
'borough': 'Staten Island',
'name': 'Howland Hook',
'stacked': 2},
'type': 'Feature'},
```

```
{'geometry': {'coordinates': [-74.1418167896889, 40.630146741193826],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.259',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'Elm',  
    'annoline2': 'Park',  
    'annoline3': None,  
    'bbox': [-74.1418167896889,  
      40.630146741193826,  
      -74.1418167896889,  
      40.630146741193826],  
    'borough': 'Staten Island',  
    'name': 'Elm Park',  
    'stacked': 2},  
  'type': 'Feature'},  
{'geometry': {'coordinates': [-73.91665331978048, 40.652117451793494],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.260',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'Remsen',  
    'annoline2': 'Village',  
    'annoline3': None,  
    'bbox': [-73.91665331978048,  
      40.652117451793494,  
      -73.91665331978048,  
      40.652117451793494],  
    'borough': 'Brooklyn',  
    'name': 'Remsen Village',  
    'stacked': 2},  
  'type': 'Feature'},  
{'geometry': {'coordinates': [-73.88511776379292, 40.6627442796966],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.261',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'New',  
    'annoline2': 'Lots',  
    'annoline3': None,  
    'bbox': [-73.88511776379292,  
      40.6627442796966,  
      -73.88511776379292,  
      40.6627442796966],  
    'borough': 'Brooklyn',  
    'name': 'New Lots',  
    'stacked': 2},  
  'type': 'Feature'},  
{'geometry': {'coordinates': [-73.90233474295836, 40.63131755039667],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.262',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'Paerdegat',  
    'annoline2': 'Basin',  
    'annoline3': None,  
    'bbox': [-73.90233474295836,  
      40.63131755039667,  
      -73.90233474295836,  
      40.63131755039667],  
    'borough': 'Brooklyn',  
    'name': 'Paerdegat Basin',  
    'stacked': 2},  
  'type': 'Feature'},  
{'geometry': {'coordinates': [-73.91515391550404, 40.61597423962336],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.263',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'Mill',  
    'annoline2': 'Basin',  
    'annoline3': None,  
    'bbox': [-73.91515391550404,  
      40.61597423962336,  
      -73.91515391550404,  
      40.61597423962336],  
    'borough': 'Brooklyn',
```



```
'name': 'Mill Basin',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.79646462081593, 40.71145964370482],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.264',
'properties': {'annoangle': 0.0,
'annoline1': 'Jamaica',
'annoline2': 'Hills',
'annoline3': None,
'bbox': [-73.79646462081593,
40.71145964370482,
-73.79646462081593,
40.71145964370482],
'borough': 'Queens',
'name': 'Jamaica Hills',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.79671678028349, 40.73350025429757],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.265',
'properties': {'annoangle': 0.0,
'annoline1': 'Utopia',
'annoline2': None,
'annoline3': None,
'bbox': [-73.79671678028349,
40.73350025429757,
-73.79671678028349,
40.73350025429757],
'borough': 'Queens',
'name': 'Utopia',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.80486120040537, 40.73493618075478],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.266',
'properties': {'annoangle': 0.0,
'annoline1': 'Pomonok',
'annoline2': None,
'annoline3': None,
'bbox': [-73.80486120040537,
40.73493618075478,
-73.80486120040537,
40.73493618075478],
'borough': 'Queens',
'name': 'Pomonok',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.89467996270574, 40.7703173929982],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.267',
'properties': {'annoangle': 0.0,
'annoline1': 'Astoria',
'annoline2': 'Heights',
'annoline3': None,
'bbox': [-73.89467996270574,
40.7703173929982,
-73.89467996270574,
40.7703173929982],
'borough': 'Queens',
'name': 'Astoria Heights',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90119903387667, 40.83142834161548],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.268',
'properties': {'annoangle': 0.0,
'annoline1': 'Claremont',
'annoline2': 'Village',
'annoline3': None,
'bbox': [-73.90119903387667,
40.83142834161548,
```

```

-73.90119903387667,
40.83142834161548],
'borough': 'Bronx',
'name': 'Claremont Village',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91584652759009, 40.824780490842905],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.269',
'properties': {'annoangle': 0.0,
'annoline1': 'Concourse',
'annoline2': 'Village',
'annoline3': None,
'bbox': [-73.91584652759009,
40.824780490842905,
-73.91584652759009,
40.824780490842905],
'borough': 'Bronx',
'name': 'Concourse Village',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91655551964419, 40.84382617671654],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.270',
'properties': {'annoangle': 0.0,
'annoline1': 'Mount',
'annoline2': 'Eden',
'annoline3': None,
'bbox': [-73.91655551964419,
40.84382617671654,
-73.91655551964419,
40.84382617671654],
'borough': 'Bronx',
'name': 'Mount Eden',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90829930881988, 40.84884160724665],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.271',
'properties': {'annoangle': 0.0,
'annoline1': 'Mount',
'annoline2': 'Hope',
'annoline3': None,
'bbox': [-73.90829930881988,
40.84884160724665,
-73.90829930881988,
40.84884160724665],
'borough': 'Bronx',
'name': 'Mount Hope',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96355614094303, 40.76028033131374],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.272',
'properties': {'annoangle': 0.0,
'annoline1': 'Sutton',
'annoline2': 'Place',
'annoline3': None,
'bbox': [-73.96355614094303,
40.76028033131374,
-73.96355614094303,
40.76028033131374],
'borough': 'Manhattan',
'name': 'Sutton Place',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.95386782130745, 40.743414090073536],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.273',
'properties': {'annoangle': 0.0,
'annoline1': 'Hunters',
'annoline2': 'Point',

```

```

'annoline3': None,
'bbox': [-73.95386782130745,
40.743414090073536,
-73.95386782130745,
40.743414090073536],
'borough': 'Queens',
'name': 'Hunters Point',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.96770824581834, 40.75204236950722],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.274',
'properties': {'annoangle': 0.0,
'annoline1': 'Turtle',
'annoline2': 'Bay',
'annoline3': None,
'bbox': [-73.96770824581834,
40.75204236950722,
-73.96770824581834,
40.75204236950722],
'borough': 'Manhattan',
'name': 'Turtle Bay',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.97121928722265, 40.746917410740195],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.275',
'properties': {'annoangle': 0.0,
'annoline1': 'Tudor',
'annoline2': 'City',
'annoline3': None,
'bbox': [-73.97121928722265,
40.746917410740195,
-73.97121928722265,
40.746917410740195],
'borough': 'Manhattan',
'name': 'Tudor City',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.97405170469203, 40.73099955477061],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.276',
'properties': {'annoangle': 0.0,
'annoline1': 'Stuyvesant',
'annoline2': 'Town',
'annoline3': None,
'bbox': [-73.97405170469203,
40.73099955477061,
-73.97405170469203,
40.73099955477061],
'borough': 'Manhattan',
'name': 'Stuyvesant Town',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.9909471052826, 40.739673047638426],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.277',
'properties': {'annoangle': 0.0,
'annoline1': 'Flatiron',
'annoline2': None,
'annoline3': None,
'bbox': [-73.9909471052826,
40.739673047638426,
-73.9909471052826,
40.739673047638426],
'borough': 'Manhattan',
'name': 'Flatiron',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.91819286431682, 40.74565180608076],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.278',

```

```

'properties': {'annoangle': 0.0,
'annoline1': 'Sunnyside',
'annoline2': 'Gardens',
'annoline3': None,
'bbox': [-73.91819286431682,
40.74565180608076,
-73.91819286431682,
40.74565180608076],
'borough': 'Queens',
'name': 'Sunnyside Gardens',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93244235260178, 40.73725071694497],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.279',
'properties': {'annoangle': 0.0,
'annoline1': 'Blissville',
'annoline2': None,
'annoline3': None,
'bbox': [-73.93244235260178,
40.73725071694497,
-73.93244235260178,
40.73725071694497],
'borough': 'Queens',
'name': 'Blissville',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.99550751888415, 40.70328109093014],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.280',
'properties': {'annoangle': 0.0,
'annoline1': 'Fulton',
'annoline2': 'Ferry',
'annoline3': None,
'bbox': [-73.99550751888415,
40.70328109093014,
-73.99550751888415,
40.70328109093014],
'borough': 'Brooklyn',
'name': 'Fulton Ferry',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.98111603592393, 40.70332149882874],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.281',
'properties': {'annoangle': 0.0,
'annoline1': 'Vinegar',
'annoline2': 'Hill',
'annoline3': None,
'bbox': [-73.98111603592393,
40.70332149882874,
-73.98111603592393,
40.70332149882874],
'borough': 'Brooklyn',
'name': 'Vinegar Hill',
'stacked': 2},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.93053108817338, 40.67503986503237],
'type': 'Point'},
'geometry_name': 'geom',
'id': 'nyu_2451_34572.282',
'properties': {'annoangle': 0.0,
'annoline1': 'Weeksville',
'annoline2': None,
'annoline3': None,
'bbox': [-73.93053108817338,
40.67503986503237,
-73.93053108817338,
40.67503986503237],
'borough': 'Brooklyn',
'name': 'Weeksville',
'stacked': 1},
'type': 'Feature'},
{'geometry': {'coordinates': [-73.90331684852599, 40.67786104769531],

```

```

    'geometry': {'coordinates': [[-73.90331684852599, 40.67786104769531],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.283',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Broadway',
    'annoline2': 'Junction',
    'annoline3': None,
    'bbox': [-73.90331684852599,
    40.67786104769531,
    -73.90331684852599,
    40.67786104769531],
    'borough': 'Brooklyn',
    'name': 'Broadway Junction',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.9887528074504, 40.70317632822692],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.284',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Dumbo',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.9887528074504,
    40.70317632822692,
    -73.9887528074504,
    40.70317632822692],
    'borough': 'Brooklyn',
    'name': 'Dumbo',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.12059399718001, 40.60180957631444],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.285',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Manor',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-74.12059399718001,
    40.60180957631444,
    -74.12059399718001,
    40.60180957631444],
    'borough': 'Staten Island',
    'name': 'Manor Heights',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.13208447484298, 40.60370692627371],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.286',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Willowbrook',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.13208447484298,
    40.60370692627371,
    -74.13208447484298,
    40.60370692627371],
    'borough': 'Staten Island',
    'name': 'Willowbrook',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.21776636068567, 40.541139922091766],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.287',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Sandy',
    'annoline2': 'Ground',
    'annoline3': None,
    'bbox': [-74.21776636068567,
    40.541139922091766,
    -74.21776636068567,
    40.541139922091766],
    'borough': 'Staten Island',
    'name': 'Sandy Ground'.
```

```

      'name': 'Sandy Ground',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.12727240604946, 40.579118742961214],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.288',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Egbertville',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-74.12727240604946,
        40.579118742961214,
        -74.12727240604946,
        40.579118742961214],
      'borough': 'Staten Island',
      'name': 'Egbertville',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.89213760232822, 40.56737588957032],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.289',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Roxbury',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.89213760232822,
        40.56737588957032,
        -73.89213760232822,
        40.56737588957032],
      'borough': 'Queens',
      'name': 'Roxbury',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.95918459428702, 40.598525095137255],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.290',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Homecrest',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.95918459428702,
        40.598525095137255,
        -73.95918459428702,
        40.598525095137255],
      'borough': 'Brooklyn',
      'name': 'Homecrest',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.88114319200604, 40.716414511158185],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.291',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Middle',
      'annoline2': 'Village',
      'annoline3': None,
      'bbox': [-73.88114319200604,
        40.716414511158185,
        -73.88114319200604,
        40.716414511158185],
      'borough': 'Queens',
      'name': 'Middle Village',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.20152556457658, 40.52626406734812],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.292',
    'properties': {'annoangle': 0.0,
      'annoline1': "Prince's",
      'annoline2': 'Bay',
      'annoline3': None,
      'bbox': [-74.20152556457658,
        40.52626406734812,
        -74.20152556457658,

```

```

    40.52626406734812],
    'borough': 'Staten Island',
    'name': "Prince's Bay",
    'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.13792663771568, 40.57650629379489],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.293',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Lighthouse',
      'annoline2': 'Hill',
      'annoline3': None,
      'bbox': [-74.13792663771568,
        40.57650629379489,
        -74.13792663771568,
        40.57650629379489],
      'borough': 'Staten Island',
      'name': 'Lighthouse Hill',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-74.22957080626941, 40.51954145748909],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.294',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Richmond',
      'annoline2': 'Valley',
      'annoline3': None,
      'bbox': [-74.22957080626941,
        40.51954145748909,
        -74.22957080626941,
        40.51954145748909],
      'borough': 'Staten Island',
      'name': 'Richmond Valley',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.82667757138641, 40.79060155670148],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.295',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Malba',
      'annoline2': None,
      'annoline3': None,
      'bbox': [-73.82667757138641,
        40.79060155670148,
        -73.82667757138641,
        40.79060155670148],
      'borough': 'Queens',
      'name': 'Malba',
      'stacked': 1},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.890345709872, 40.6819989345173],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.296',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Highland',
      'annoline2': 'Park',
      'annoline3': None,
      'bbox': [-73.890345709872,
        40.6819989345173,
        -73.890345709872,
        40.6819989345173],
      'borough': 'Brooklyn',
      'name': 'Highland Park',
      'stacked': 2},
    'type': 'Feature'},
  {'geometry': {'coordinates': [-73.94841515328893, 40.60937770113766],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.297',
    'properties': {'annoangle': 0.0,
      'annoline1': 'Madison',
      'annoline2': None,
      'annoline3': None

```

```

    'annoline3': None,
    'bbox': [-73.94841515328893,
    40.60937770113766,
    -73.94841515328893,
    40.60937770113766],
    'borough': 'Brooklyn',
    'name': 'Madison',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.86172577555115, 40.85272297633017],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.298',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Bronxdale',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.86172577555115,
    40.85272297633017,
    -73.86172577555115,
    40.85272297633017],
    'borough': 'Bronx',
    'name': 'Bronxdale',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.85931863221647, 40.86578787802982],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.299',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Allerton',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.85931863221647,
    40.86578787802982,
    -73.85931863221647,
    40.86578787802982],
    'borough': 'Bronx',
    'name': 'Allerton',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.90152264513144, 40.8703923914147],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.300',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Kingsbridge',
    'annoline2': 'Heights',
    'annoline3': None,
    'bbox': [-73.90152264513144,
    40.8703923914147,
    -73.90152264513144,
    40.8703923914147],
    'borough': 'Bronx',
    'name': 'Kingsbridge Heights',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.94817709920184, 40.64692606658579],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.301',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Erasmus',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.94817709920184,
    40.64692606658579,
    -73.94817709920184,
    40.64692606658579],
    'borough': 'Brooklyn',
    'name': 'Erasmus',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.00011136202637, 40.75665808227519],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.302',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Erasmus',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-74.00011136202637,
    40.75665808227519,
    -74.00011136202637,
    40.75665808227519],
    'borough': 'Brooklyn',
    'name': 'Erasmus',
    'stacked': 1},
    'type': 'Feature'}],
    'type': 'FeatureCollection'}
```



```

    'properties': {'annoangle': 0.0,
    'annoline1': 'Hudson',
    'annoline2': 'Yards',
    'annoline3': None,
    'bbox': [-74.00011136202637,
    40.75665808227519,
    -74.00011136202637,
    40.75665808227519],
    'borough': 'Manhattan',
    'name': 'Hudson Yards',
    'stacked': 2},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.80553002968718, 40.58733774018741],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.303',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Hammels',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.80553002968718,
    40.58733774018741,
    -73.80553002968718,
    40.58733774018741],
    'borough': 'Queens',
    'name': 'Hammels',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.76596781445627, 40.611321691283834],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.304',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Bayswater',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.76596781445627,
    40.611321691283834,
    -73.76596781445627,
    40.611321691283834],
    'borough': 'Queens',
    'name': 'Bayswater',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-73.94563070334091, 40.756091297094706],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.305',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Queensbridge',
    'annoline2': None,
    'annoline3': None,
    'bbox': [-73.94563070334091,
    40.756091297094706,
    -73.94563070334091,
    40.756091297094706],
    'borough': 'Queens',
    'name': 'Queensbridge',
    'stacked': 1},
    'type': 'Feature'},
{'geometry': {'coordinates': [-74.08173992211962, 40.61731079252983],
    'type': 'Point'},
    'geometry_name': 'geom',
    'id': 'nyu_2451_34572.306',
    'properties': {'annoangle': 0.0,
    'annoline1': 'Fox',
    'annoline2': 'Hills',
    'annoline3': None,
    'bbox': [-74.08173992211962,
    40.61731079252983,
    -74.08173992211962,
    40.61731079252983],
    'borough': 'Staten Island',
    'name': 'Fox Hills',
    'stacked': 2},
    'type': 'Feature'}}],
'totalFeatures': 306,
'type': 'FeatureCollection'

```

```
'type': 'FeatureCollection'}
```

We can see that a lot of relevant information is available in the features key. So, creating a new variable to store the information

```
In [0]:
```

```
neighborhoods_data = newyork_data['features']
```

Checking the size of this data

```
In [0]:
```

```
len(neighborhoods_data)
```

```
Out[0]:
```

```
306
```

Having a look at one random point of this data to get a feel of the data

```
In [0]:
```

```
neighborhoods_data[10]
```

```
Out[0]:
```

```
{'geometry': {'coordinates': [-73.83579759808117, 40.866858107252696],  
  'type': 'Point'},  
  'geometry_name': 'geom',  
  'id': 'nyu_2451_34572.11',  
  'properties': {'annoangle': 0.0,  
    'annoline1': 'Baychester',  
    'annoline2': None,  
    'annoline3': None,  
    'bbox': [-73.83579759808117,  
      40.866858107252696,  
      -73.83579759808117,  
      40.866858107252696],  
    'borough': 'Bronx',  
    'name': 'Baychester',  
    'stacked': 1},  
  'type': 'Feature'}
```

## Transforming the data into a pandas dataframe

Creating an empty dataframe which will be populated

```
In [0]:
```

```
# define the dataframe columns  
column_names = ['Borough', 'Neighborhood', 'Latitude', 'Longitude']  
  
# instantiate the dataframe  
neighborhoods = pd.DataFrame(columns=column_names)
```

Looping through the data and filling in the dataframe

```
In [0]:
```

```
for data in neighborhoods_data:  
    borough = neighborhood_name = data['properties']['borough']  
    neighborhood_name = data['properties']['name']  
  
    neighborhood_latlon = data['geometry']['coordinates']  
    neighborhood_lat = neighborhood_latlon[1]  
    neighborhood_lon = neighborhood_latlon[0]
```

```
neighborhoods = neighborhoods.append({'Borough': borough,
                                     'Neighborhood': neighborhood_name,
                                     'Latitude': neighborhood_lat,
                                     'Longitude': neighborhood_lon}, ignore_index=True)
```

Looking at the top five rows of the populated dataframe

In [0]:

```
neighborhoods.head()
```

Out[0]:

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

As Newyork is a big city, I will be working only with Manhattan Borough.

In [0]:

```
manhattan_data = neighborhoods[neighborhoods['Borough'] == 'Manhattan'].reset_index(drop=True)
manhattan_data.head()
```

Out[0]:

	Borough	Neighborhood	Latitude	Longitude
0	Manhattan	Marble Hill	40.876551	-73.910660
1	Manhattan	Chinatown	40.715618	-73.994279
2	Manhattan	Washington Heights	40.851903	-73.936900
3	Manhattan	Inwood	40.867684	-73.921210
4	Manhattan	Hamilton Heights	40.823604	-73.949688

## Creating a Map with the neighborhoods superimposed over it

In [0]:

```
address = 'Manhattan, NY'

geolocator = Nominatim(user_agent="ny_explorer")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('The geograpical coordinate of Manhattan are {}, {}'.format(latitude, longitude))
```

The geograpical coordinate of Manhattan are 40.7900869, -73.9598295.

In [0]:

```
# create map of Manhattan using latitude and longitude values
map_manhattan = folium.Map(location=[latitude, longitude], zoom_start=11)

# add markers to map
for lat, lng, label in zip(manhattan_data['Latitude'], manhattan_data['Longitude'], manhattan_data[
'Neighborhood']):
    label = folium.Popup(label, parse_html=True)
    folium.CircleMarker(
        [lat, lng],
```

```
radius=5,  
popup=label,  
color='blue',  
fill=True,  
fill_color='#3186cc',  
fill_opacity=0.7,  
parse_html=False).add_to(map_manhattan)
```

map\_manhattan

Out[0]:

## Foursquare API credentials

In [0]:

```
CLIENT_ID = 'DVDB4FS3WRHM41RR0TQN51UNJ0R4L4EAU3TRBJHLKN3N3MLB' # your Foursquare ID  
CLIENT_SECRET = 'N51KOH4G0SYL5QG0RVIPKQ5QHKEZ1SAERZQCASFPI44PAKM' # your Foursquare Secret  
VERSION = '20180605' # Foursquare API version  
  
print('Your credentials:')  
print('CLIENT_ID: ' + CLIENT_ID)  
print('CLIENT_SECRET: ' + CLIENT_SECRET)
```

Your credentials:

```
CLIENT_ID: DVDB4FS3WRHM41RR0TQN51UNJ0R4L4EAU3TRBJHLKN3N3MLB  
CLIENT_SECRET: N51KOH4G0SYL5QG0RVIPKQ5QHKEZ1SAERZQCASFPI44PAKM
```

## Exploring the first neighbourhood in our data

In [0]:

```
manhattan_data.loc[0, 'Neighborhood']
```

Out[0]:

'Marble Hill'

## Getting the latitude and longitude of Marble Hill

In [0]:

```

neighborhood_latitude = manhattan_data.loc[0, 'Latitude'] # neighborhood latitude value
neighborhood_longitude = manhattan_data.loc[0, 'Longitude'] # neighborhood longitude value

neighborhood_name = manhattan_data.loc[0, 'Neighborhood'] # neighborhood name

print('Latitude and longitude values of {} are {}, {}'.format(neighborhood_name,
                                                             neighborhood_latitude,
                                                             neighborhood_longitude))

```

Latitude and longitude values of Marble Hill are 40.87655077879964, -73.91065965862981.

## Getting the top hundred venues in Marble Hill

In [0]:

```

# type your answer here
radius = 500 # define radius
LIMIT = 100
url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
    CLIENT_ID,
    CLIENT_SECRET,
    VERSION,
    neighborhood_latitude,
    neighborhood_longitude,
    radius,
    LIMIT)
url # display URL

```

Out[0]:

```

'https://api.foursquare.com/v2/venues/explore?
&client_id=DVDB4FS3WRHM41RR0TQN51UNJOR4L4EAU3TRBJHLKN3N3MLB&client_secret=N51KOH4G0SYL5QG0RVIPKQ5QF
SAERZQCASFPI44PAKM&v=20180605&ll=40.87655077879964,-73.91065965862981&radius=500&limit=100'

```

In [0]:

```

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

```

Out[0]:

```

{'meta': {'code': 200, 'requestId': '5d809a8b6bdee60039272ef5'},
 'response': {'groups': [{'items': [{'reasons': {'count': 0,
 'items': [{'reasonName': 'globalInteractionReason',
 'summary': 'This spot is popular',
 'type': 'general'}]},
 'referralId': 'e-0-4b4429abf964a52037f225e3-0',
 'venue': {'categories': [{'icon': {'prefix':
 'https://ss3.4sqi.net/img/categories_v2/food/pizza_',
 'suffix': '.png'}},
 'id': '4bf58dd8d48988dlca941735',
 'name': 'Pizza Place',
 'pluralName': 'Pizza Places',
 'primary': True,
 'shortName': 'Pizza'}]},
 'delivery': {'id': '72548',
 'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
 'prefix': 'https://fastly.4sqi.net/img/general/cap/',
 'sizes': [40, 50]},
 'name': 'seamless'},
 'url': 'https://www.seamless.com/menu/arturos-pizza-5189-broadway-ave-new-york/72548?
affiliate=1131&utm_source=foursquare-affiliate-
network&utm_medium=affiliate&utm_campaign=1131&utm_content=72548'},
 'id': '4b4429abf964a52037f225e3',
 'location': {'address': '5198 Broadway',
 'cc': 'US',
 'city': 'New York',
 'country': 'United States',
 'crossStreet': 'at 225th St.',
 'distance': 240,
 'formattedAddress': ['5198 Broadway (at 225th St.)',

```

```

    'New York, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
        'lat': 40.87441177110231,
        'lng': -73.91027100981574}],
    'lat': 40.87441177110231,
    'lng': -73.91027100981574,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Arturo's',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
        'items': [{'reasonName': 'globalInteractionReason',
            'summary': 'This spot is popular',
            'type': 'general'}]},
        'referralId': 'e-0-4baf59e8f964a520a6f93be3-1',
        'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/gym_yogastudio_',
            'suffix': '.png'},
            'id': '4bf58dd8d48988d102941735',
            'name': 'Yoga Studio',
            'pluralName': 'Yoga Studios',
            'primary': True,
            'shortName': 'Yoga Studio'}]},
            'id': '4baf59e8f964a520a6f93be3',
            'location': {'address': '5500 Broadway',
                'cc': 'US',
                'city': 'Bronx',
                'country': 'United States',
                'crossStreet': '230th Street',
                'distance': 376,
                'formattedAddress': ['5500 Broadway (230th Street)',
                    'Bronx, NY 10463',
                    'United States']},
                'labeledLatLngs': [{'label': 'display',
                    'lat': 40.876843690797934,
                    'lng': -73.90620384419528}],
                    'lat': 40.876843690797934,
                    'lng': -73.90620384419528,
                    'postalCode': '10463',
                    'state': 'NY'},
                    'name': 'Bikram Yoga',
                    'photos': {'count': 0, 'groups': []}},
                    {'reasons': {'count': 0,
                        'items': [{'reasonName': 'globalInteractionReason',
                            'summary': 'This spot is popular',
                            'type': 'general'}]},
                            'referralId': 'e-0-4b79cc46f964a520c5122fe3-2',
                            'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/diner_',
                                'suffix': '.png'},
                                    'id': '4bf58dd8d48988d147941735',
                                    'name': 'Diner',
                                    'pluralName': 'Diners',
                                    'primary': True,
                                    'shortName': 'Diner'}]},
                                    'id': '4b79cc46f964a520c5122fe3',
                                    'location': {'address': '3033 Tibbett Ave',
                                        'cc': 'US',
                                        'city': 'Bronx',
                                        'country': 'United States',
                                        'crossStreet': 'btwn 230th & 231st',
                                        'distance': 452,
                                        'formattedAddress': ['3033 Tibbett Ave (btwn 230th & 231st)',
                                            'Bronx, NY 10463',
                                            'United States']},
                                            'labeledLatLngs': [{'label': 'display',
                                                'lat': 40.8804044222466,
                                                'lng': -73.90893738006402}],
                                                    'lat': 40.8804044222466,
                                                    'lng': -73.90893738006402,
                                                    'postalCode': '10463',
                                                    'state': 'NY'},
                                                    'name': 'Tibbett Diner',
                                                    'photos': {'count': 0, 'groups': []}},
                                                    {'reasons': {'count': 0,
                                                        'items': [{'reasonName': 'globalInteractionReason',

```

```

        'summary': 'This spot is popular',
        'type': 'general']]],
    'referralId': 'e-0-55f81cd2498ee903149fcc64-3',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/coffeeshop_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1e0931735',
    'name': 'Coffee Shop',
    'pluralName': 'Coffee Shops',
    'primary': True,
    'shortName': 'Coffee Shop'}]],
    'id': '55f81cd2498ee903149fcc64',
    'location': {'address': '171 W 230th St',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'crossStreet': 'Kimberly Pl',
    'distance': 441,
    'formattedAddress': ['171 W 230th St (Kimberly Pl)',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87753134921497,
    'lng': -73.90558216359267}],
    'lat': 40.87753134921497,
    'lng': -73.90558216359267,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Starbucks',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general']]],
    'referralId': 'e-0-4b5357adf964a520319827e3-4',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/donuts_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d148941735',
    'name': 'Donut Shop',
    'pluralName': 'Donut Shops',
    'primary': True,
    'shortName': 'Donuts'}]],
    'id': '4b5357adf964a520319827e3',
    'location': {'address': '5501 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'crossStreet': 'W 230th St',
    'distance': 342,
    'formattedAddress': ['5501 Broadway (W 230th St)',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87713584201589,
    'lng': -73.90666550701411}],
    'lat': 40.87713584201589,
    'lng': -73.90666550701411,
    'postalCode': '10463',
    'state': 'NY'},
    'name': "Dunkin'",
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general']]],
    'referralId': 'e-0-55f751ca498eacc0307d1cfe-5',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/building/gym_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d176941735',
    'name': 'Gym',
    'pluralName': 'Gyms',
    'primary': True,
    'shortName': 'Gym'}]],
    'id': '55f751ca498eacc0307d1cfe',
    'location': {'address': '5520 Broadway'

```

```

location': { 'address': '5520 Broadway',
'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'crossStreet': 'at W 230th St',
'distance': 411,
'formattedAddress': ['5520 Broadway (at W 230th St)',
'Bronx, NY 10463',
'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.87714687429521,
'lng': -73.90583697267095}],
'lat': 40.87714687429521,
'lng': -73.90583697267095,
'neighborhood': 'Kingsbridge',
'postalCode': '10463',
'state': 'NY'},
'name': 'Blink Fitness Riverdale',
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-4a725falf964a520f6dalfe3-6',
'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/arts_entertainment/stadium_tennis_',
'suffix': '.png'},
'id': '4e39a891bd410d7aed40cbc2',
'name': 'Tennis Stadium',
'pluralName': 'Tennis Stadiums',
'primary': True,
'shortName': 'Tennis'}]},
'id': '4a725falf964a520f6dalfe3',
'location': {'address': '2600 Netherland Ave',
'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'distance': 402,
'formattedAddress': ['2600 Netherland Ave',
'Bronx, NY 10463',
'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.8786283,
'lng': -73.9145678}],
'lat': 40.8786283,
'lng': -73.9145678,
'postalCode': '10463',
'state': 'NY'},
'name': 'TCR The Club of Riverdale',
'photos': {'count': 0, 'groups': []},
'venuePage': {'id': '40358759'}}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-546d31ca498e561c698a0320-7',
'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/departmentstore_',
'suffix': '.png'},
'id': '4bf58dd8d48988d1f6941735',
'name': 'Department Store',
'pluralName': 'Department Stores',
'primary': True,
'shortName': 'Department Store'}]},
'id': '546d31ca498e561c698a0320',
'location': {'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'distance': 478,
'formattedAddress': ['Bronx, NY', 'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.87723198343352,
'lng': -73.90504239962168}],
'lat': 40.87723198343352,
'lng': -73.90504239962168,
'state': 'NY'},
'name': 'T.J. Maxx',
'photos': {'count': 0, 'groups': []}}}.

```



```

    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
      'items': [{ 'reasonName': 'globalInteractionReason',
        'summary': 'This spot is popular',
        'type': 'general'}]},
      'referralId': 'e-0-4b9c9c6af964a520b27236e3-8',
      'venue': {'categories': [{ 'icon': { 'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/seafood_',
      'suffix': '.png'},
        'id': '4bf58dd8d48988dlce941735',
        'name': 'Seafood Restaurant',
        'pluralName': 'Seafood Restaurants',
        'primary': True,
        'shortName': 'Seafood'}]},
      'delivery': { 'id': '277380',
        'provider': { 'icon': { 'name': '/delivery_provider_seamless_20180129.png',
          'prefix': 'https://fastly.4sqi.net/img/general/cap/',
          'sizes': [40, 50]},
          'name': 'seamless'},
        'url': 'https://www.seamless.com/menu/land--sea-restaurant-5535-broadway-ave-bronx/277380?affiliat
ffiliate=1131&utm_source=foursquare-affiliate-
network&utm_medium=affiliate&utm_campaign=1131&utm_content=277380'},
        'id': '4b9c9c6af964a520b27236e3',
        'location': { 'address': '5535 Broadway',
          'cc': 'US',
          'city': 'Bronx',
          'country': 'United States',
          'crossStreet': '231st St',
          'distance': 429,
          'formattedAddress': ['5535 Broadway (231st St)',
            'Bronx, NY 10463',
            'United States'],
          'labeledLatLngs': [{ 'label': 'display',
            'lat': 40.87788463309788,
            'lng': -73.90587282193539}],
          'lat': 40.87788463309788,
          'lng': -73.90587282193539,
          'postalCode': '10463',
          'state': 'NY'},
          'name': 'Land & Sea Restaurant',
          'photos': { 'count': 0, 'groups': []}}},
      {'reasons': {'count': 0,
        'items': [{ 'reasonName': 'globalInteractionReason',
          'summary': 'This spot is popular',
          'type': 'general'}]},
          'referralId': 'e-0-4b9c9c43f964a520ac7236e3-9',
          'venue': { 'categories': [{ 'icon': { 'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/discountstore_',
            'suffix': '.png'},
              'id': '52dea92d3cf9994f4e043dbb',
              'name': 'Discount Store',
              'pluralName': 'Discount Stores',
              'primary': True,
              'shortName': 'Discount Store'}]},
            'id': '4b9c9c43f964a520ac7236e3',
            'location': { 'address': '5545 Broadway',
              'cc': 'US',
              'city': 'Bronx',
              'country': 'United States',
              'crossStreet': '231st St',
              'distance': 492,
              'formattedAddress': ['5545 Broadway (231st St)',
                'Bronx, NY 10463',
                'United States'],
              'labeledLatLngs': [{ 'label': 'display',
                'lat': 40.878270422202085,
                'lng': -73.9052646742604}],
              'lat': 40.878270422202085,
              'lng': -73.9052646742604,
              'postalCode': '10463',
              'state': 'NY'},
              'name': 'Lot Less Closeouts',
              'photos': { 'count': 0, 'groups': []}}},
            {'reasons': {'count': 0,
              'items': [{ 'reasonName': 'globalInteractionReason',
                'summary': 'This spot is popular',
                'type': 'general'}]},
                'referralId': 'e-0-4b88a053f964a5208a1132e3-10'

```

```

referralId': 'e-0-5631194e498e2de074de661c-11',
'venu': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/pharmacy_',
'suffix': '.png'},
'id': '4bf58dd8d48988d10f951735',
'name': 'Pharmacy',
'pluralName': 'Pharmacies',
'primary': True,
'shortName': 'Pharmacy'}}],
'id': '4b88e053f964a5208a1132e3',
'location': {'address': '5237 Broadway',
'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'crossStreet': '228th Street',
'distance': 190,
'formattedAddress': ['5237 Broadway (228th Street)',
'Bronx, NY 10463',
'United States']},
'labeledLatLngs': [{'label': 'display',
'lat': 40.875466574434704,
'lng': -73.90890629016033}],
'lat': 40.875466574434704,
'lng': -73.90890629016033,
'postalCode': '10463',
'state': 'NY'},
'name': 'Rite Aid',
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-5631194e498e2de074de661c-11',
'venu': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/education/lab_',
'suffix': '.png'},
'id': '5744ccdf4b0c0459246b4cd',
'name': 'Supplement Shop',
'pluralName': 'Supplement Shops',
'primary': True,
'shortName': 'Supplement Shop'}}],
'id': '5631194e498e2de074de661c',
'location': {'address': '5510 Broadway',
'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'distance': 428,
'formattedAddress': ['5510 Broadway',
'Bronx, NY 10463',
'United States']},
'labeledLatLngs': [{'label': 'display',
'lat': 40.87716,
'lng': -73.905632}],
'lat': 40.87716,
'lng': -73.905632,
'postalCode': '10463',
'state': 'NY'},
'name': 'Vitamin Shoppe',
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-57655be738faa66160da7527-12',
'venu': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/coffeeshop_',
'suffix': '.png'},
'id': '4bf58dd8d48988d1e0931735',
'name': 'Coffee Shop',
'pluralName': 'Coffee Shops',
'primary': True,
'shortName': 'Coffee Shop'}}],
'id': '57655be738faa66160da7527',
'location': {'address': '50 W 225th St',
'cc': 'US',
'city': 'New York',
'country': 'United States',
'distance': 355

```

```

    distance: 333,
    'formattedAddress': ['50 W 225th St',
      'New York, NY 10463',
      'United States'],
    'labeledLatLngs': [{'label': 'display',
      'lat': 40.873754554218515,
      'lng': -73.90861305343668}],
    'lat': 40.873754554218515,
    'lng': -73.90861305343668,
    'postalCode': '10463',
    'state': 'NY',
    'name': 'Starbucks',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
      'items': [{'reasonName': 'globalInteractionReason',
        'summary': 'This spot is popular',
        'type': 'general'}]},
      'referralId': 'e-0-4b9f030af964a520eb0f37e3-13',
      'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/videogames_',
      'suffix': '.png'},
        'id': '4bf58dd8d48988d10b951735',
        'name': 'Video Game Store',
        'pluralName': 'Video Game Stores',
        'primary': True,
        'shortName': 'Video Games'}]},
        'id': '4b9f030af964a520eb0f37e3',
        'location': {'address': '90 W 225th St Ste A-B',
          'cc': 'US',
          'city': 'Bronx',
          'country': 'United States',
          'crossStreet': 'btw Broadway & Exterior St.',
          'distance': 277,
          'formattedAddress': ['90 W 225th St Ste A-B (btw Broadway & Exterior St.)',
            'Bronx, NY 10463',
            'United States'],
          'labeledLatLngs': [{'label': 'display',
            'lat': 40.874266802124836,
            'lng': -73.90934218062803}],
            'lat': 40.874266802124836,
            'lng': -73.90934218062803,
            'postalCode': '10463',
            'state': 'NY',
            'name': 'GameStop',
            'photos': {'count': 0, 'groups': []}},
            {'reasons': {'count': 0,
              'items': [{'reasonName': 'globalInteractionReason',
                'summary': 'This spot is popular',
                'type': 'general'}]},
                'referralId': 'e-0-56229ff8498e2abb44b6f12b-14',
                'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/default_',
              'suffix': '.png'},
                'id': '4bf58dd8d48988d1ff941735',
                'name': 'Miscellaneous Shop',
                'pluralName': 'Miscellaneous Shops',
                'primary': True,
                'shortName': 'Shop'}]},
                'id': '56229ff8498e2abb44b6f12b',
                'location': {'address': '171 W 230th St',
                  'cc': 'US',
                  'city': 'Bronx',
                  'country': 'United States',
                  'distance': 472,
                  'formattedAddress': ['171 W 230th St',
                    'Bronx, NY 10463',
                    'United States'],
                  'labeledLatLngs': [{'label': 'display',
                    'lat': 40.87745060873134,
                    'lng': -73.9051704920654}],
                    'lat': 40.87745060873134,
                    'lng': -73.9051704920654,
                    'postalCode': '10463',
                    'state': 'NY',
                    'name': 'Five Below',
                    'photos': {'count': 0, 'groups': []}},
                    {'reasons': {'count': 0,
                      'items': [{'reasonName': 'globalInteractionReason',

```

```

    'items': [{ 'reasonName': 'globalInteractionReason',
      'summary': 'This spot is popular',
      'type': 'general' } ] },
    'referralId': 'e-0-4ec68016cc21b428e1d2060a-15',
    'venue': { 'categories': [ { 'icon': { 'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/financial_',
      'suffix': '.png' },
      'id': '4bf58dd8d48988d10a951735',
      'name': 'Bank',
      'pluralName': 'Banks',
      'primary': True,
      'shortName': 'Bank' } ] },
    'id': '4ec68016cc21b428e1d2060a',
    'location': { 'address': '281 W 230th St',
      'cc': 'US',
      'city': 'Bronx',
      'country': 'United States',
      'distance': 347,
      'formattedAddress': [ '281 W 230th St',
        'Bronx, NY 10463',
        'United States' ],
      'labeledLatLngs': [ { 'label': 'display',
        'lat': 40.8794958,
        'lng': -73.9092856 } ],
      'lat': 40.8794958,
      'lng': -73.9092856,
      'postalCode': '10463',
      'state': 'NY' },
    'name': 'TD Bank',
    'photos': { 'count': 0, 'groups': [ ] } },
    { 'reasons': { 'count': 0,
      'items': [ { 'reasonName': 'globalInteractionReason',
        'summary': 'This spot is popular',
        'type': 'general' } ] },
      'referralId': 'e-0-4e4e4517bd4101d0d7a67568-16',
      'venue': { 'categories': [ { 'icon': { 'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/icecream_',
        'suffix': '.png' },
          'id': '4bf58dd8d48988d1c9941735',
          'name': 'Ice Cream Shop',
          'pluralName': 'Ice Cream Shops',
          'primary': True,
          'shortName': 'Ice Cream' } ] },
        'id': '4e4e4517bd4101d0d7a67568',
        'location': { 'address': '5501 Broadway',
          'cc': 'US',
          'city': 'Bronx',
          'country': 'United States',
          'distance': 332,
          'formattedAddress': [ '5501 Broadway',
            'Bronx, NY 10463',
            'United States' ],
          'labeledLatLngs': [ { 'label': 'display',
            'lat': 40.8769755336728,
            'lng': -73.90675193198494 } ],
          'lat': 40.8769755336728,
          'lng': -73.90675193198494,
          'postalCode': '10463',
          'state': 'NY' },
          'name': 'Baskin-Robbins',
          'photos': { 'count': 0, 'groups': [ ] } },
        { 'reasons': { 'count': 0,
          'items': [ { 'reasonName': 'globalInteractionReason',
            'summary': 'This spot is popular',
            'type': 'general' } ] },
            'referralId': 'e-0-4dfe40df8877333e195b68fc-17',
            'venue': { 'categories': [ { 'icon': { 'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/steakhouse_',
              'suffix': '.png' },
                'id': '4bf58dd8d48988d1cc941735',
                'name': 'Steakhouse',
                'pluralName': 'Steakhouses',
                'primary': True,
                'shortName': 'Steakhouse' } ] },
              'delivery': { 'id': '330981',
                'provider': { 'icon': { 'name': '/delivery_provider_seamless_20180129.png',
                  'prefix': 'https://fastly.4sqi.net/img/general/cap/',

```

```

    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/parrilla-latina-5523-broadway-bronx/330981?
affiliate=1131&utm_source=foursquare-affiliate-
network&utm_medium=affiliate&utm_campaign=1131&utm_content=330981'},
    'id': '4dfe40df8877333e195b68fc',
    'location': {'address': '230th St & Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 399,
    'formattedAddress': ['230th St & Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87747294351472,
    'lng': -73.90607346968568}],
    'lat': 40.87747294351472,
    'lng': -73.90607346968568,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Parrilla Latina',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-585c205665e7c70a2f1055ea-18',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/default_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d14e941735',
    'name': 'American Restaurant',
    'pluralName': 'American Restaurants',
    'primary': True,
    'shortName': 'American'}]},
    'id': '585c205665e7c70a2f1055ea',
    'location': {'address': '5520 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5520 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Boston Market',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/774886?affiliate=1131&utm_
source=foursquare-affiliate-network&utm_medium=affiliate&utm_campaign=1131&utm_content=774886'},
    'id': '4e4ce4debd413c4cc66d05d0',
    'location': {'address': '5549 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5549 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/774886?affiliate=1131&utm_
source=foursquare-affiliate-network&utm_medium=affiliate&utm_campaign=1131&utm_content=774886'},
    'id': '4e4ce4debd413c4cc66d05d0',
    'location': {'address': '5549 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5549 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/774886?affiliate=1131&utm_
source=foursquare-affiliate-network&utm_medium=affiliate&utm_campaign=1131&utm_content=774886'},
    'id': '4e4ce4debd413c4cc66d05d0',
    'location': {'address': '5549 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5549 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/774886?affiliate=1131&utm_
source=foursquare-affiliate-network&utm_medium=affiliate&utm_campaign=1131&utm_content=774886'},
    'id': '4e4ce4debd413c4cc66d05d0',
    'location': {'address': '5549 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5549 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/774886?affiliate=1131&utm_
source=foursquare-affiliate-network&utm_medium=affiliate&utm_campaign=1131&utm_content=774886'},
    'id': '4e4ce4debd413c4cc66d05d0',
    'location': {'address': '5549 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 452,
    'formattedAddress': ['5549 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87743,
    'lng': -73.9054121}],
    'lat': 40.87743,
    'lng': -73.9054121,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4e4ce4debd413c4cc66d05d0-19',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'delivery': {'id': '774886',
    'provider': {'icon': {'name': '/delivery_provider_seamless_20180129.png',
    'prefix': 'https://fastly.4sqi.net/img/general/cap/',
    'sizes': [40, 50]},
    'name': 'seamless'},
    'url': 'https://www.seamless.com/menu/subway-5549-broadway-bronx/7748
```

```

'city': 'Bronx',
'country': 'United States',
'distance': 493,
'formattedAddress': ['5549 Broadway',
'Bronx, NY 10463',
'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.87849271667849,
'lng': -73.90538547211088}],
'lat': 40.87849271667849,
'lng': -73.90538547211088,
'postalCode': '10463',
'state': 'NY'},
'name': 'SUBWAY',
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-4c852173dc018cfa2bc3e56c-20',
'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/apparel_kids_',
'suffix': '.png'}},
'id': '4bf58dd8d48988d105951735',
'name': 'Kids Store',
'pluralName': 'Kids Stores',
'primary': True,
'shortName': 'Kids Store'}]},
'id': '4c852173dc018cfa2bc3e56c',
'location': {'address': '44 W 225th St',
'cc': 'US',
'city': 'Bronx',
'country': 'United States',
'distance': 383,
'formattedAddress': ['44 W 225th St',
'Bronx, NY 10463',
'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.873671591133125,
'lng': -73.90815619608166}],
'lat': 40.873671591133125,
'lng': -73.90815619608166,
'postalCode': '10463',
'state': 'NY'},
'name': "The Children's Place",
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]},
'referralId': 'e-0-58f4fc2b829b0c305839877b-21',
'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/shops/apparel_',
'suffix': '.png'}},
'id': '4bf58dd8d48988d103951735',
'name': 'Clothing Store',
'pluralName': 'Clothing Stores',
'primary': True,
'shortName': 'Apparel'}]},
'id': '58f4fc2b829b0c305839877b',
'location': {'cc': 'US',
'city': 'New York',
'country': 'United States',
'distance': 410,
'formattedAddress': ['New York, NY 10463', 'United States'],
'labeledLatLngs': [{'label': 'display',
'lat': 40.87747,
'lng': -73.90594}],
'lat': 40.87747,
'lng': -73.90594,
'postalCode': '10463',
'state': 'NY'},
'name': 'Forever 21',
'photos': {'count': 0, 'groups': []}},
{'reasons': {'count': 0,
'items': [{'reasonName': 'globalInteractionReason',
'summary': 'This spot is popular',
'type': 'general'}]}]}

```

```

    'type': 'general']]],
    'referralId': 'e-0-4d0a529133d6b60cf4cf9985-22',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d1c5941735',
    'name': 'Sandwich Place',
    'pluralName': 'Sandwich Places',
    'primary': True,
    'shortName': 'Sandwiches'}]},
    'id': '4d0a529133d6b60cf4cf9985',
    'location': {'address': '5209 Broadway',
    'cc': 'US',
    'city': 'Bronx',
    'country': 'United States',
    'distance': 463,
    'formattedAddress': ['5209 Broadway',
    'Bronx, NY 10463',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.877720351115315,
    'lng': -73.90537973066263}],
    'lat': 40.877720351115315,
    'lng': -73.90537973066263,
    'postalCode': '10463',
    'state': 'NY'},
    'name': 'Subway',
    'photos': {'count': 0, 'groups': []}},
    {'reasons': {'count': 0,
    'items': [{'reasonName': 'globalInteractionReason',
    'summary': 'This spot is popular',
    'type': 'general'}]},
    'referralId': 'e-0-4ed7956b8b81b2bf28adc714-23',
    'venue': {'categories': [{'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/deli_',
    'suffix': '.png'},
    'id': '4bf58dd8d48988d146941735',
    'name': 'Deli / Bodega',
    'pluralName': 'Delis / Bodegas',
    'primary': True,
    'shortName': 'Deli / Bodega'}]},
    'id': '4ed7956b8b81b2bf28adc714',
    'location': {'address': '135 Terrace View Ave.',
    'cc': 'US',
    'city': 'New York',
    'country': 'United States',
    'distance': 175,
    'formattedAddress': ['135 Terrace View Ave.',
    'New York, NY 10034',
    'United States'],
    'labeledLatLngs': [{'label': 'display',
    'lat': 40.87647647652852,
    'lng': -73.91274586964578}],
    'lat': 40.87647647652852,
    'lng': -73.91274586964578,
    'postalCode': '10034',
    'state': 'NY'},
    'name': 'Terrace View Delicatessen',
    'photos': {'count': 0, 'groups': []}}],
    'name': 'recommended',
    'type': 'Recommended Places'}],
    'headerFullLocation': 'Marble Hill, New York',
    'headerLocation': 'Marble Hill',
    'headerLocationGranularity': 'neighborhood',
    'suggestedBounds': {'ne': {'lat': 40.88105078329964,
    'lng': -73.90471933917806},
    'sw': {'lat': 40.87205077429964, 'lng': -73.91659997808156}},
    'suggestedFilters': {'filters': [{'key': 'openNow', 'name': 'Open now'}]},
    'header': 'Tap to show:',
    'totalResults': 24}}

```

Defining a function to get the category type

In [0]:

```
# function that extracts the category of the venue
```

```
# function that extracts the category of the venue
def get_category_type(row):
    try:
        categories_list = row['categories']
    except:
        categories_list = row['venue.categories']

    if len(categories_list) == 0:
        return None
    else:
        return categories_list[0]['name']
```

Cleaning of the json file and importing data into dataframe

In [0]:

```
venues = results['response']['groups'][0]['items']

nearby_venues = json_normalize(venues) # flatten JSON

# filter columns
filtered_columns = ['venue.name', 'venue.categories', 'venue.location.lat', 'venue.location.lng']
nearby_venues = nearby_venues.loc[:, filtered_columns]

# filter the category for each row
nearby_venues['venue.categories'] = nearby_venues.apply(get_category_type, axis=1)

# clean columns
nearby_venues.columns = [col.split(".")[1] for col in nearby_venues.columns]

nearby_venues.head()
```

Out[0]:

	name	categories	lat	lng
0	Arturo's	Pizza Place	40.874412	-73.910271
1	Bikram Yoga	Yoga Studio	40.876844	-73.906204
2	Tibbett Diner	Diner	40.880404	-73.908937
3	Starbucks	Coffee Shop	40.877531	-73.905582
4	Dunkin'	Donut Shop	40.877136	-73.906666

## Exploring Neighborhoods in Manhattan

Defining a function to get similar kind of data for all the neighborhoods in Manhattan

In [0]:

```
def getNearbyVenues(names, latitudes, longitudes, radius=500):

    venues_list=[]
    for name, lat, lng in zip(names, latitudes, longitudes):
        print(name)

        # create the API request URL
        url = 'https://api.foursquare.com/v2/venues/explore?
&client_id={} &client_secret={} &v={} &ll={},{} &radius={} &limit={}'.format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            lat,
            lng,
            radius,
            LIMIT)

        # make the GET request
        results = requests.get(url).json()["response"]["groups"][0]["items"]

        # return only relevant information for each nearby venue
```



```

        venues_list.append((
            name,
            lat,
            lng,
            v['venue']['name'],
            v['venue']['location']['lat'],
            v['venue']['location']['lng'],
            v['venue']['categories'][0]['name']) for v in results))

nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
nearby_venues.columns = ['Neighborhood',
                        'Neighborhood Latitude',
                        'Neighborhood Longitude',
                        'Venue',
                        'Venue Latitude',
                        'Venue Longitude',
                        'Venue Category']

return(nearby_venues)

```

Creating a new dataframe containing the data of different neighborhoods in Manhattan

In [0]:

```

manhattan_venues = getNearbyVenues(names=manhattan_data['Neighborhood'],
                                   latitudes=manhattan_data['Latitude'],
                                   longitudes=manhattan_data['Longitude']
                                   )

```

```

Marble Hill
Chinatown
Washington Heights
Inwood
Hamilton Heights
Manhattanville
Central Harlem
East Harlem
Upper East Side
Yorkville
Lenox Hill
Roosevelt Island
Upper West Side
Lincoln Square
Clinton
Midtown
Murray Hill
Chelsea
Greenwich Village
East Village
Lower East Side
Tribeca
Little Italy
Soho
West Village
Manhattan Valley
Morningside Heights
Gramercy
Battery Park City
Financial District
Carnegie Hill
Noho
Civic Center
Midtown South
Sutton Place
Turtle Bay
Tudor City
Stuyvesant Town
Flatiron
Hudson Yards

```

Having a look at the dataframe

In [0]:

```
print(manhattan_venues.shape)
manhattan_venues.head()
```

(3326, 7)

Out[0]:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.91066	Arturo's	40.874412	-73.910271	Pizza Place
1	Marble Hill	40.876551	-73.91066	Bikram Yoga	40.876844	-73.906204	Yoga Studio
2	Marble Hill	40.876551	-73.91066	Tibbett Diner	40.880404	-73.908937	Diner
3	Marble Hill	40.876551	-73.91066	Starbucks	40.877531	-73.905582	Coffee Shop
4	Marble Hill	40.876551	-73.91066	Dunkin'	40.877136	-73.906666	Donut Shop

Grouping the venues by Neighborhood

In [0]:

```
manhattan_venues.groupby('Neighborhood').count()
```

Out[0]:

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Battery Park City	100	100	100	100	100	100
Carnegie Hill	100	100	100	100	100	100
Central Harlem	46	46	46	46	46	46
Chelsea	100	100	100	100	100	100
Chinatown	100	100	100	100	100	100
Civic Center	100	100	100	100	100	100
Clinton	100	100	100	100	100	100
East Harlem	45	45	45	45	45	45
East Village	100	100	100	100	100	100
Financial District	100	100	100	100	100	100
Flatiron	100	100	100	100	100	100
Gramercy	100	100	100	100	100	100
Greenwich Village	100	100	100	100	100	100
Hamilton Heights	61	61	61	61	61	61
Hudson Yards	76	76	76	76	76	76
Inwood	57	57	57	57	57	57
Lenox Hill	100	100	100	100	100	100
Lincoln Square	100	100	100	100	100	100
Little Italy	100	100	100	100	100	100
Lower East Side	61	61	61	61	61	61
Manhattan Valley	63	63	63	63	63	63
Manhattanville	44	44	44	44	44	44
Marble Hill	24	24	24	24	24	24
Midtown	100	100	100	100	100	100
Midtown South	100	100	100	100	100	100
Morningside Heights	40	40	40	40	40	40
Murray Hill	100	100	100	100	100	100
Noho	100	100	100	100	100	100
Roosevelt Island	24	24	24	24	24	24

	Neighborhood	Latitude	Longitude	Venue	Latitude	Longitude	Venue Category
	Soho	100	100	100	100	100	100
	Neighborhood Stuyvesant Town	17	17	17	17	17	17
	Sutton Place	100	100	100	100	100	100
	Tribeca	100	100	100	100	100	100
	Tudor City	82	82	82	82	82	82
	Turtle Bay	100	100	100	100	100	100
	Upper East Side	100	100	100	100	100	100
	Upper West Side	100	100	100	100	100	100
	Washington Heights	86	86	86	86	86	86
	West Village	100	100	100	100	100	100
	Yorkville	100	100	100	100	100	100

Looking at the unique categories

In [0]:

```
print('There are {} uniques categories.'.format(len(manhattan_venues['Venue Category'].unique())))
```

There are 338 uniques categories.

## Analyzing Each Neighborhood

In [0]:

```
# one hot encoding
manhattan_onehot = pd.get_dummies(manhattan_venues[['Venue Category']], prefix="", prefix_sep="")

# add neighborhood column back to dataframe
manhattan_onehot['Neighborhood'] = manhattan_venues['Neighborhood']

# move neighborhood column to the first column
fixed_columns = [manhattan_onehot.columns[-1]] + list(manhattan_onehot.columns[:-1])
manhattan_onehot = manhattan_onehot[fixed_columns]

manhattan_onehot.head()
```

Out[0]:

	Neighborhood	Accessories Store	Adult Boutique	Afghan Restaurant	African Restaurant	American Restaurant	Animal Shelter	Antique Shop	Arcade	Arepa Restaurant	Argentinian Restaurant	Galle
0	Marble Hill	0	0	0	0	0	0	0	0	0	0	
1	Marble Hill	0	0	0	0	0	0	0	0	0	0	
2	Marble Hill	0	0	0	0	0	0	0	0	0	0	
3	Marble Hill	0	0	0	0	0	0	0	0	0	0	
4	Marble Hill	0	0	0	0	0	0	0	0	0	0	

Grouping by neighborhoods and taking mean of frequency of occurrence

In [0]:

```
manhattan_grouped = manhattan_onehot.groupby('Neighborhood').mean().reset_index()
manhattan_grouped
```

Out[0]:

	Neighborhood	Accessories Store	Adult Boutique	Afghan Restaurant	African Restaurant	American Restaurant	Animal Shelter	Antique Shon	Arcade	Arepa Restaurant	Argentinian Restaurant	G
--	--------------	----------------------	-------------------	----------------------	-----------------------	------------------------	-------------------	-----------------	--------	---------------------	---------------------------	---

		Store	Boutique	Restaurant	Restaurant	Restaurant	Shelter	Shop		Restaurant	Restaurant	
0	Neighborhood	Accessories Store	Adult Boutique	Afghan Restaurant	African Restaurant	American Restaurant	Animal Shelter	Antique Shop	Arcade	Arepa Restaurant	Argentinian Restaurant	G
1	Carnegie Hill	0.000000	0.00	0.00	0.000000	0.010000	0.00	0.00	0.00	0.000000	0.000000	0.00
2	Central Harlem	0.000000	0.00	0.00	0.065217	0.043478	0.00	0.00	0.00	0.000000	0.000000	0.00
3	Chelsea	0.000000	0.00	0.00	0.000000	0.030000	0.00	0.00	0.00	0.000000	0.000000	0.00
4	Chinatown	0.000000	0.00	0.00	0.000000	0.040000	0.00	0.00	0.00	0.000000	0.000000	0.00
5	Civic Center	0.000000	0.00	0.00	0.000000	0.030000	0.00	0.01	0.00	0.000000	0.000000	0.00
6	Clinton	0.000000	0.00	0.00	0.000000	0.040000	0.00	0.00	0.00	0.000000	0.000000	0.00
7	East Harlem	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
8	East Village	0.000000	0.00	0.00	0.000000	0.020000	0.00	0.01	0.00	0.020000	0.010000	0.00
9	Financial District	0.010000	0.00	0.00	0.000000	0.030000	0.00	0.00	0.00	0.000000	0.000000	0.00
10	Flatiron	0.000000	0.00	0.00	0.000000	0.040000	0.00	0.00	0.00	0.000000	0.000000	0.00
11	Gramercy	0.000000	0.00	0.00	0.000000	0.040000	0.00	0.00	0.01	0.000000	0.000000	0.00
12	Greenwich Village	0.000000	0.00	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.000000	0.00
13	Hamilton Heights	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
14	Hudson Yards	0.000000	0.00	0.00	0.000000	0.065789	0.00	0.00	0.00	0.000000	0.000000	0.00
15	Inwood	0.000000	0.00	0.00	0.000000	0.035088	0.00	0.00	0.00	0.000000	0.000000	0.00
16	Lenox Hill	0.000000	0.00	0.01	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
17	Lincoln Square	0.000000	0.00	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.000000	0.00
18	Little Italy	0.000000	0.00	0.00	0.000000	0.010000	0.01	0.00	0.00	0.000000	0.000000	0.00
19	Lower East Side	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.016393	0.00
20	Manhattan Valley	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
21	Manhattanville	0.000000	0.00	0.00	0.000000	0.022727	0.00	0.00	0.00	0.000000	0.000000	0.00
22	Marble Hill	0.000000	0.00	0.00	0.000000	0.041667	0.00	0.00	0.00	0.000000	0.000000	0.00
23	Midtown	0.000000	0.00	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.000000	0.00
24	Midtown South	0.000000	0.00	0.00	0.000000	0.030000	0.00	0.00	0.00	0.000000	0.000000	0.00
25	Morningside Heights	0.000000	0.00	0.00	0.000000	0.075000	0.00	0.00	0.00	0.000000	0.000000	0.00
26	Murray Hill	0.000000	0.00	0.00	0.000000	0.030000	0.00	0.00	0.00	0.000000	0.000000	0.00
27	Noho	0.000000	0.01	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.010000	0.00
28	Roosevelt Island	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
29	Soho	0.010000	0.00	0.00	0.000000	0.010000	0.00	0.00	0.00	0.000000	0.000000	0.00
30	Stuyvesant Town	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00
31	Sutton Place	0.000000	0.01	0.00	0.000000	0.030000	0.00	0.00	0.00	0.000000	0.000000	0.00
32	Tribeca	0.000000	0.00	0.00	0.000000	0.050000	0.00	0.00	0.00	0.000000	0.010000	0.00
33	Tudor City	0.000000	0.00	0.00	0.000000	0.012195	0.00	0.00	0.00	0.000000	0.000000	0.00
34	Turtle Bay	0.000000	0.00	0.00	0.000000	0.010000	0.00	0.00	0.00	0.000000	0.000000	0.00
35	Upper East Side	0.000000	0.00	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.000000	0.00
36	Upper West Side	0.010000	0.00	0.00	0.000000	0.020000	0.00	0.00	0.00	0.000000	0.000000	0.00
37	Washington Heights	0.011628	0.00	0.00	0.000000	0.011628	0.00	0.00	0.00	0.011628	0.000000	0.00
38	West Village	0.010000	0.00	0.00	0.000000	0.040000	0.00	0.00	0.00	0.000000	0.000000	0.00
39	Yorkville	0.000000	0.00	0.00	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.00

Printing the neighborhoods along with top 5 common venues

In [0]:

```
num_top_venues = 5

for hood in manhattan_grouped['Neighborhood']:
    print("----"+hood+"----")
    temp = manhattan_grouped[manhattan_grouped['Neighborhood'] == hood].T.reset_index()
    temp.columns = ['venue', 'freq']
    temp = temp.iloc[1:]
    temp['freq'] = temp['freq'].astype(float)
    temp = temp.round({'freq': 2})
    print(temp.sort_values('freq', ascending=False).reset_index(drop=True).head(num_top_venues))
    print('\n')
```

----Battery Park City----

	venue	freq
0	Park	0.09
1	Coffee Shop	0.07
2	Hotel	0.05
3	Gym	0.04
4	Memorial Site	0.04

----Carnegie Hill----

	venue	freq
0	Coffee Shop	0.06
1	Pizza Place	0.06
2	Cosmetics Shop	0.04
3	Café	0.04
4	Yoga Studio	0.03

----Central Harlem----

	venue	freq
0	Chinese Restaurant	0.07
1	African Restaurant	0.07
2	Gym / Fitness Center	0.04
3	Bar	0.04
4	Public Art	0.04

----Chelsea----

	venue	freq
0	Coffee Shop	0.06
1	Italian Restaurant	0.05
2	Bakery	0.05
3	Ice Cream Shop	0.05
4	Nightclub	0.04

----Chinatown----

	venue	freq
0	Chinese Restaurant	0.09
1	Cocktail Bar	0.05
2	American Restaurant	0.04
3	Vietnamese Restaurant	0.04
4	Bakery	0.04

----Civic Center----

	venue	freq
0	Gym / Fitness Center	0.05
1	Coffee Shop	0.04
2	Italian Restaurant	0.04
3	French Restaurant	0.04
4	Hotel	0.04

----Clinton----

	venue	freq
0	Theater	0.11
1	Gym / Fitness Center	0.05
2	American Restaurant	0.04
3	Italian Restaurant	0.04
4	Spa	0.04

----East Harlem----

	venue	freq
0	Mexican Restaurant	0.13
1	Bakery	0.09
2	Deli / Bodega	0.07
3	Latin American Restaurant	0.04
4	Thai Restaurant	0.04

----East Village----

	venue	freq
0	Bar	0.07
1	Ice Cream Shop	0.05
2	Wine Bar	0.05
3	Pizza Place	0.04
4	Mexican Restaurant	0.04

----Financial District----

	venue	freq
0	Coffee Shop	0.09
1	Pizza Place	0.04
2	Gym	0.04
3	Hotel	0.04
4	Wine Shop	0.04

----Flatiron----

	venue	freq
0	Gym / Fitness Center	0.06
1	Yoga Studio	0.04
2	American Restaurant	0.04
3	Japanese Restaurant	0.04
4	Gym	0.04

----Gramercy----

	venue	freq
0	Bar	0.06
1	Italian Restaurant	0.05
2	American Restaurant	0.04
3	Pizza Place	0.04
4	Bagel Shop	0.04

----Greenwich Village----

	venue	freq
0	Italian Restaurant	0.13
1	Clothing Store	0.05
2	Sushi Restaurant	0.04
3	Café	0.03
4	Seafood Restaurant	0.03

----Hamilton Heights----

	venue	freq
0	Café	0.07
1	Mexican Restaurant	0.07
2	Pizza Place	0.07
3	Coffee Shop	0.05
4	Deli / Bodega	0.05

----Hudson Yards----

	venue	freq
0	American Restaurant	0.07
1	Italian Restaurant	0.05
2	Café	0.05
3	Gym / Fitness Center	0.05
4	Restaurant	0.04

----Inwood----

	venue	freq
0	Mexican Restaurant	0.09
1	Lounge	0.07

2	Café	0.07
3	Pizza Place	0.05
4	Park	0.04

----Lenox Hill----

	venue	freq
0	Italian Restaurant	0.07
1	Coffee Shop	0.07
2	Pizza Place	0.05
3	Sushi Restaurant	0.04
4	Gym / Fitness Center	0.03

----Lincoln Square----

	venue	freq
0	Theater	0.06
1	Gym / Fitness Center	0.06
2	Café	0.05
3	Italian Restaurant	0.05
4	Concert Hall	0.05

----Little Italy----

	venue	freq
0	Bakery	0.06
1	Café	0.04
2	Salon / Barbershop	0.03
3	Hotel	0.03
4	Clothing Store	0.03

----Lower East Side----

	venue	freq
0	Pizza Place	0.07
1	Coffee Shop	0.07
2	Café	0.05
3	Art Gallery	0.05
4	Ramen Restaurant	0.03

----Manhattan Valley----

	venue	freq
0	Indian Restaurant	0.05
1	Pizza Place	0.05
2	Coffee Shop	0.05
3	Yoga Studio	0.03
4	Playground	0.03

----Manhattanville----

	venue	freq
0	Coffee Shop	0.07
1	Italian Restaurant	0.05
2	Mexican Restaurant	0.05
3	Seafood Restaurant	0.05
4	Fried Chicken Joint	0.05

----Marble Hill----

	venue	freq
0	Sandwich Place	0.08
1	Coffee Shop	0.08
2	Yoga Studio	0.04
3	Bank	0.04
4	Department Store	0.04

----Midtown----

	venue	freq
0	Hotel	0.07
1	Cocktail Bar	0.04
2	Coffee Shop	0.04
3	Theater	0.04
4	Clothing Store	0.04

----Midtown South----

	venue	freq
0	Korean Restaurant	0.14
1	Hotel Bar	0.05
2	Hotel	0.05
3	Japanese Restaurant	0.04
4	Cosmetics Shop	0.04

----Morningside Heights----

	venue	freq
0	Coffee Shop	0.08
1	American Restaurant	0.08
2	Park	0.08
3	Bookstore	0.08
4	Deli / Bodega	0.05

----Murray Hill----

	venue	freq
0	Coffee Shop	0.05
1	Japanese Restaurant	0.04
2	Sandwich Place	0.04
3	Hotel	0.04
4	Gym	0.03

----Noho----

	venue	freq
0	Italian Restaurant	0.06
1	French Restaurant	0.04
2	Cocktail Bar	0.04
3	Art Gallery	0.04
4	Gift Shop	0.03

----Roosevelt Island----

	venue	freq
0	Park	0.08
1	Coffee Shop	0.08
2	Sandwich Place	0.08
3	Metro Station	0.04
4	Liquor Store	0.04

----Soho----

	venue	freq
0	Clothing Store	0.10
1	Boutique	0.06
2	Women's Store	0.04
3	Shoe Store	0.04
4	Art Gallery	0.04

----Stuyvesant Town----

	venue	freq
0	Bar	0.12
1	Park	0.12
2	Playground	0.12
3	Farmers Market	0.06
4	Fountain	0.06

----Sutton Place----

	venue	freq
0	Gym / Fitness Center	0.06
1	Italian Restaurant	0.04
2	Indian Restaurant	0.04
3	Furniture / Home Store	0.04
4	American Restaurant	0.03

----Tribeca----

	venue	freq
0	Park	0.05
1	Café	0.05
2	American Restaurant	0.05



```
3 Italian Restaurant 0.05
4 Boutique 0.04
```

#### ----Tudor City----

```
venue freq
0 Mexican Restaurant 0.06
1 Park 0.06
2 Café 0.06
3 Sushi Restaurant 0.05
4 Greek Restaurant 0.05
```

#### ----Turtle Bay----

```
venue freq
0 Italian Restaurant 0.07
1 Sushi Restaurant 0.06
2 Steakhouse 0.05
3 Coffee Shop 0.04
4 Wine Bar 0.04
```

#### ----Upper East Side----

```
venue freq
0 Italian Restaurant 0.08
1 Exhibit 0.07
2 Bakery 0.05
3 Art Gallery 0.05
4 Coffee Shop 0.04
```

#### ----Upper West Side----

```
venue freq
0 Italian Restaurant 0.06
1 Coffee Shop 0.04
2 Wine Bar 0.04
3 Bar 0.03
4 Indian Restaurant 0.03
```

#### ----Washington Heights----

```
venue freq
0 Café 0.06
1 Bakery 0.05
2 Mobile Phone Shop 0.03
3 Grocery Store 0.03
4 Sandwich Place 0.03
```

#### ----West Village----

```
venue freq
0 Italian Restaurant 0.09
1 Cosmetics Shop 0.06
2 New American Restaurant 0.06
3 Cocktail Bar 0.04
4 American Restaurant 0.04
```

#### ----Yorkville----

```
venue freq
0 Italian Restaurant 0.06
1 Bar 0.06
2 Coffee Shop 0.06
3 Gym 0.06
4 Pizza Place 0.05
```

### Putting all of the data in a dataframe

In [0]:

```
def return_most_common_venues(row, num_top_venues):
    row_categories = row.iloc[1:]
    row_categories_sorted = row_categories.sort_values(ascending=False)
```

```
return row_categories_sorted.index.values[0:num_top_venues]
```

In [0]:

```
num_top_venues = 10

indicators = ['st', 'nd', 'rd']

# create columns according to number of top venues
columns = ['Neighborhood']
for ind in np.arange(num_top_venues):
    try:
        columns.append('{}{} Most Common Venue'.format(ind+1, indicators[ind]))
    except:
        columns.append('{}th Most Common Venue'.format(ind+1))

# create a new dataframe
neighborhoods_venues_sorted = pd.DataFrame(columns=columns)
neighborhoods_venues_sorted['Neighborhood'] = manhattan_grouped['Neighborhood']

for ind in np.arange(manhattan_grouped.shape[0]):
    neighborhoods_venues_sorted.iloc[ind, 1:] =
return_most_common_venues(manhattan_grouped.iloc[ind, :], num_top_venues)

neighborhoods_venues_sorted.head()
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Battery Park City	Park	Coffee Shop	Hotel	Gym	Memorial Site	Italian Restaurant	Wine Shop	Food Court	Shopping Mall	Sandwich Place
1	Carnegie Hill	Coffee Shop	Pizza Place	Cosmetics Shop	Café	Japanese Restaurant	Grocery Store	French Restaurant	Yoga Studio	Bookstore	Bar
2	Central Harlem	Chinese Restaurant	African Restaurant	Gym / Fitness Center	French Restaurant	Seafood Restaurant	Public Art	American Restaurant	Bar	Caribbean Restaurant	Southern / Soul Food Restaurant
3	Chelsea	Coffee Shop	Italian Restaurant	Bakery	Ice Cream Shop	Nightclub	Hotel	American Restaurant	Theater	Seafood Restaurant	Tapas Restaurant
4	Chinatown	Chinese Restaurant	Cocktail Bar	Vietnamese Restaurant	American Restaurant	Bakery	Spa	Salon / Barbershop	Bubble Tea Shop	Boutique	Optical Shop

## Clustering the neighborhoods

In [0]:

```
# set number of clusters
kclusters = 5

manhattan_grouped_clustering = manhattan_grouped.drop('Neighborhood', 1)

# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).fit(manhattan_grouped_clustering)

# check cluster labels generated for each row in the dataframe
kmeans.labels_[0:10]
```

Out[0]:

```
array([3, 3, 0, 3, 0, 3, 3, 2, 0, 3], dtype=int32)
```

In [0]:

```
# add clustering labels
neighborhoods_venues_sorted.insert(0, 'Cluster Labels', kmeans.labels_)

manhattan_merged = manhattan_data
```

```
# merge toronto_grouped with toronto_data to add latitude/longitude for each neighborhood
manhattan_merged = manhattan_merged.join(neighborhoods_venues_sorted.set_index('Neighborhood'), on
='Neighborhood')

manhattan_merged.head() # check the last columns!
```

Out[0]:

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue
0	Manhattan	Marble Hill	40.876551	-73.910660	2	Sandwich Place	Coffee Shop	Yoga Studio	Pizza Place	Supplement Shop	Steakhouse	Res
1	Manhattan	Chinatown	40.715618	-73.994279	0	Chinese Restaurant	Cocktail Bar	Vietnamese Restaurant	American Restaurant	Bakery	Spa	Bar
2	Manhattan	Washington Heights	40.851903	-73.936900	2	Café	Bakery	Mobile Phone Shop	Sandwich Place	Grocery Store	Cosmetics Shop	
3	Manhattan	Inwood	40.867684	-73.921210	2	Mexican Restaurant	Café	Lounge	Pizza Place	Bakery	Deli / Bodega	Ph
4	Manhattan	Hamilton Heights	40.823604	-73.949688	2	Mexican Restaurant	Café	Pizza Place	Deli / Bodega	Coffee Shop	Yoga Studio	

Visualizing the resulting clusters

In [0]:

```
# create map
map_clusters = folium.Map(location=[latitude, longitude], zoom_start=11)

# set color scheme for the clusters
x = np.arange(kclusters)
ys = [i + x + (i*x)**2 for i in range(kclusters)]
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
rainbow = [colors.rgb2hex(i) for i in colors_array]

# add markers to the map
markers_colors = []
for lat, lon, poi, cluster in zip(manhattan_merged['Latitude'], manhattan_merged['Longitude'], manhattan_merged['Neighborhood'], manhattan_merged['Cluster Labels']):
    label = folium.Popup(str(poi) + ' Cluster ' + str(cluster), parse_html=True)
    folium.CircleMarker(
        [lat, lon],
        radius=5,
        popup=label,
        color=rainbow[cluster-1],
        fill=True,
        fill_color=rainbow[cluster-1],
        fill_opacity=0.7).add_to(map_clusters)

map_clusters
```

Out[0]:

## Looking at the clusters

In [0]:

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 0, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	Chinatown	Chinese Restaurant	Cocktail Bar	Vietnamese Restaurant	American Restaurant	Bakery	Spa	Salon / Barbershop	Bubble Tea Shop	Boutique	Optical Shop
6	Central Harlem	Chinese Restaurant	African Restaurant	Gym / Fitness Center	French Restaurant	Seafood Restaurant	Public Art	American Restaurant	Bar	Caribbean Restaurant	Southern / Soul Food Restaurant
19	East Village	Bar	Ice Cream Shop	Wine Bar	Mexican Restaurant	Pizza Place	Chinese Restaurant	Ramen Restaurant	Vegetarian / Vegan Restaurant	Cocktail Bar	Coffee Shop
27	Gramercy	Bar	Italian Restaurant	American Restaurant	Pizza Place	Bagel Shop	Cocktail Bar	Mexican Restaurant	Ice Cream Shop	Hotel	Grocery Store

In [0]:

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 1, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
33	Midtown South	Korean Restaurant	Hotel Bar	Hotel	Japanese Restaurant	Cosmetics Shop	American Restaurant	Coffee Shop	Dessert Shop	Gym / Fitness Center	Yoga Studio

In [0]:

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 2, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Marble Hill	Sandwich Place	Coffee Shop	Yoga Studio	Pizza Place	Supplement Shop	Steakhouse	Seafood Restaurant	Clothing Store	Deli / Bodega	Department Store
2	Washington Heights	Café	Bakery	Mobile Phone Shop	Sandwich Place	Grocery Store	Cosmetics Shop	Coffee Shop	New American Restaurant	Latin American Restaurant	Park
3	Inwood	Mexican Restaurant	Café	Lounge	Pizza Place	Bakery	Deli / Bodega	Pharmacy	Park	Chinese Restaurant	Spanish Restaurant
4	Hamilton Heights	Mexican Restaurant	Café	Pizza Place	Deli / Bodega	Coffee Shop	Yoga Studio	Liquor Store	Indian Restaurant	Park	Sushi Restaurant

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
5	Neighborhood Manhattanville	Coffee Shop	Restaurant	Restaurant	Park	French Café / Burger Joint	Restaurant	Coffee Shop	Restaurant	Restaurant	Restaurant
7	East Harlem	Mexican Restaurant	Bakery	Deli / Bodega	Latin American Restaurant	Thai Restaurant	Cocktail Bar	Grocery Store	Donut Shop	Coffee Shop	French Restaurant
9	Yorkville	Italian Restaurant	Gym	Bar	Coffee Shop	Pizza Place	Deli / Bodega	Sushi Restaurant	Wine Shop	Mexican Restaurant	Diner
11	Roosevelt Island	Park	Sandwich Place	Coffee Shop	Liquor Store	Café	Outdoors & Recreation	Metro Station	Greek Restaurant	School	Gym
20	Lower East Side	Pizza Place	Coffee Shop	Art Gallery	Café	Japanese Restaurant	Park	Sandwich Place	Bakery	Ramen Restaurant	Chinese Restaurant
25	Manhattan Valley	Coffee Shop	Pizza Place	Indian Restaurant	Mexican Restaurant	Thai Restaurant	Spa	French Restaurant	Deli / Bodega	Yoga Studio	Bar
26	Morningside Heights	American Restaurant	Bookstore	Coffee Shop	Park	Deli / Bodega	Tennis Court	Sandwich Place	Food Truck	Burger Joint	Ice Cream Shop
36	Tudor City	Café	Park	Mexican Restaurant	Greek Restaurant	Sushi Restaurant	Deli / Bodega	Pizza Place	Garden	Dog Run	Spanish Restaurant

In [0]:

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 3, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
8	Upper East Side	Italian Restaurant	Exhibit	Art Gallery	Bakery	Coffee Shop	Juice Bar	French Restaurant	Gym / Fitness Center	Hotel	
10	Lenox Hill	Italian Restaurant	Coffee Shop	Pizza Place	Sushi Restaurant	Burger Joint	Café	Gym	Gym / Fitness Center	Sporting Goods Shop	Cosmetics Shop
12	Upper West Side	Italian Restaurant	Wine Bar	Coffee Shop	Indian Restaurant	Bakery	Bar	Vegetarian / Vegan Restaurant	Thai Restaurant	Pub	Bookstore
13	Lincoln Square	Theater	Gym / Fitness Center	Café	Plaza	Concert Hall	Italian Restaurant	Park	Performing Arts Venue	Indie Movie Theater	Restaurant
14	Clinton	Theater	Gym / Fitness Center	American Restaurant	Spa	Italian Restaurant	Hotel	Wine Shop	French Restaurant	Coffee Shop	Cosmetics Shop
15	Midtown	Hotel	Theater	Coffee Shop	Cocktail Bar	Clothing Store	Steakhouse	Café	Sporting Goods Shop	Japanese Restaurant	Bookstore
16	Murray Hill	Coffee Shop	Sandwich Place	Hotel	Japanese Restaurant	Italian Restaurant	French Restaurant	Gym / Fitness Center	American Restaurant	Gym	Restaurant
17	Chelsea	Coffee Shop	Italian Restaurant	Bakery	Ice Cream Shop	Nightclub	Hotel	American Restaurant	Theater	Seafood Restaurant	Restaurant
18	Greenwich Village	Italian Restaurant	Clothing Store	Sushi Restaurant	Café	Seafood Restaurant	Indian Restaurant	Cosmetics Shop	Chinese Restaurant	French Restaurant	Vietnamese Restaurant
21	Tribeca	Italian Restaurant	American Restaurant	Park	Café	Boutique	Spa	Wine Shop	Greek Restaurant	Gym	
22	Little Italy	Bakery	Café	Sandwich Place	Clothing Store	Salon / Barbershop	Mediterranean Restaurant	Thai Restaurant	Hotel	Ice Cream Shop	
23	Soho	Clothing Store	Boutique	Art Gallery	Shoe Store	Women's Store	Italian Restaurant	Sporting Goods Shop	Men's Store	Mediterranean Restaurant	Furniture Store
24	West Village	Italian Restaurant	Cosmetics Shop	New American Restaurant	Park	Cocktail Bar	Jazz Club	Wine Bar	American Restaurant	Bakery	Ice Cream Shop
28	Battery Park City	Park	Coffee Shop	Hotel	Gym	Memorial Site	Italian Restaurant	Wine Shop	Food Court	Shopping Mall	Sauna
29	Financial District	Coffee Shop	Pizza Place	Wine Shop	Hotel	Gym	Event Space	American Restaurant	Gym / Fitness Center	Cocktail Bar	Steakhouse

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
30	Carnegie Hill	Coffee Shop	Pizzeria	Coffee Shop	Cafe	Restaurant	Grocery Store	Restaurant	Center for Performing Arts	Bookstore	Coffee Shop
31	Noho	Italian Restaurant	Art Gallery	Cocktail Bar	French Restaurant	Rock Club	Pizza Place	Bookstore	Boutique	Coffee Shop	Gift Shop
32	Civic Center	Gym / Fitness Center	Italian Restaurant	Coffee Shop	French Restaurant	Hotel	Sandwich Place	Sporting Goods Shop	American Restaurant	Cocktail Bar	
34	Sutton Place	Gym / Fitness Center	Italian Restaurant	Indian Restaurant	Furniture / Home Store	Gym	Dessert Shop	American Restaurant	Coffee Shop	Pizza Place	Restaurant
35	Turtle Bay	Italian Restaurant	Sushi Restaurant	Steakhouse	Wine Bar	Coffee Shop	Park	Café	Ramen Restaurant	French Restaurant	Restaurant
38	Flatiron	Gym / Fitness Center	Yoga Studio	American Restaurant	Gym	Japanese Restaurant	Salon / Barbershop	Café	Clothing Store	Coffee Shop	Cosmetics Shop
39	Hudson Yards	American Restaurant	Italian Restaurant	Gym / Fitness Center	Café	Hotel	Restaurant	Ice Cream Shop	Theater	Coffee Shop	

In [0]:

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 4, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

Out[0]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
37	Stuyvesant Town	Bar	Park	Playground	Fountain	Bistro	Baseball Field	Harbor / Marina	Cocktail Bar	Coffee Shop	Heliport

## Results

Now that I have clusters of the venues which are most visited. I can decide to pick a locality to start my new restuarant.

## Discussion

I have done the analysis only for Manhattan borough. The same kind of analysis can be done for the entire of New York city too. This notebook can be used for similar kind of analysis for a different city. One needs to have the json information of the city to do this analysis.

## Conclusion

I have learned a lot during the course of this project. I have learned about open street maps, Foursquare API and also about the folium library. Thanks to the course content creators and every one of my peers who have graded my assignments.