EXPLORING COFFEE SHOP LOCATIONS IN SOUTH AFRICA

INTRODUCTION

BACKGROUND

South Africa has upon recently adopted an attractive coffee culture alongside it's booming financial districts. Amazingly so Starbucks and many new to market coffee companies have cropped up in all over. Our client (Tradebro Retail Investments) is highly interested in the move to a coffee business that will compete locally in this market which is not yet saturated.

South Africa is located at the southern most part of the African continent with a mixture of people and seasons, as much as it is of course close to the equator, the country still has some snow and cool temperatures through winter. This calls for the hot beverage industry to shine in these cool winter months.

Companies like Starbucks have recently entered into the South African Coffee market and failed dismally in a short duration. Starbucks will not be opening any new stores as reported by Business Insider https://www.businessinsider.co.za/taste-holdings-owners-of-starbucks-franchise-in-south-africa-halt-expansion-and-no-longer-opening-more-starbucks-stores-in-south-africa-anytime-soon-2018-11

Interestingly so, the demand for local coffee shops are still on the rise and our client would like to take advantage of that.

PROBLEM STATEMENT

How can we use existing location-based data to deepen our understanding of coffee shops and their locations within South African Financial Hubs?

THE CUSTOMER (TARGET AUDIENCE)

This will compromise all investors or coffee entrepreneurs who desire to use location based quantitative data in addition to their data to determine the successful location of a coffee shop or explore existing locations for purchase.

METHODOLOGY

SELECTION CRITERIA

We have reviewed the province of Gauteng, South Africa and the 3 Most popular financial hubs namely:

1. **Pretoria**
2. **Sandton**
3. **Johannesburg**

DATA FLOW

This project had used the Foursquare API as its prime data gathering source as it has a database of millions of places, especially their places API which provides the ability to perform location search, location sharing and details about a business.

Foursquare

Using central location identifications of Foursquare API features of near-by places of the neighborhoods would be mined and then searched for the Key term "coffee". Due to http request limitations the number of places where neighborhood parameter was reasonably be set to 100 and the radius parameter was set anywhere from 500 to 4000 due to the distances between areas in South Africa.

```
CLIENT_ID = 'ZKWH10LSBTKPCOFAXZ3VB5SF1310UBUMSTMYFBAAP34OJCWC' # your Foursquare ID
CLIENT_SECRET = 'XBURRWEJJNBPOUE1MDWWRYRIZPRFIWC50A4FIUO1QNQOSROC' # your Foursquare Secret
VERSION = '20180604'
LIMIT = 500
print('Your credentails:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)
```

DATA EXPLORATION

We have reviewed the different coffee shops in the set locations and explored tips, reviews and moreover visually inspected the maps to identify if offices have any correlation to the clusters of coffee shops

```
search_query = 'coffee'
radius = 4000
print(search_query + ' .... OK!')

url = 'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit
={}'.format(CLIENT_ID, CLIENT_SECRET, latitude, longitude, VERSION, search_query, radius, LIMIT)
url

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

LIBRARIES:

```python
import requests # library to handle requests
import pandas as pd # library for data analsysis
import numpy as np # library to handle data in a vectorized manner
import random # library for random number generation

!conda install -c conda-forge geopy --yes
from geopy.geocoders import Nominatim # module to convert an address into latitude and longitude values

# libraries for displaying images
from IPython.display import Image
from IPython.core.display import HTML

from bs4 import BeautifulSoup

# tranforming json file into a pandas dataframe library
from pandas.io.json import json_normalize

!conda install -c conda-forge folium=0.5.0 --yes
import folium # plotting library

print('Folium installed')
print('Libraries imported.')
```
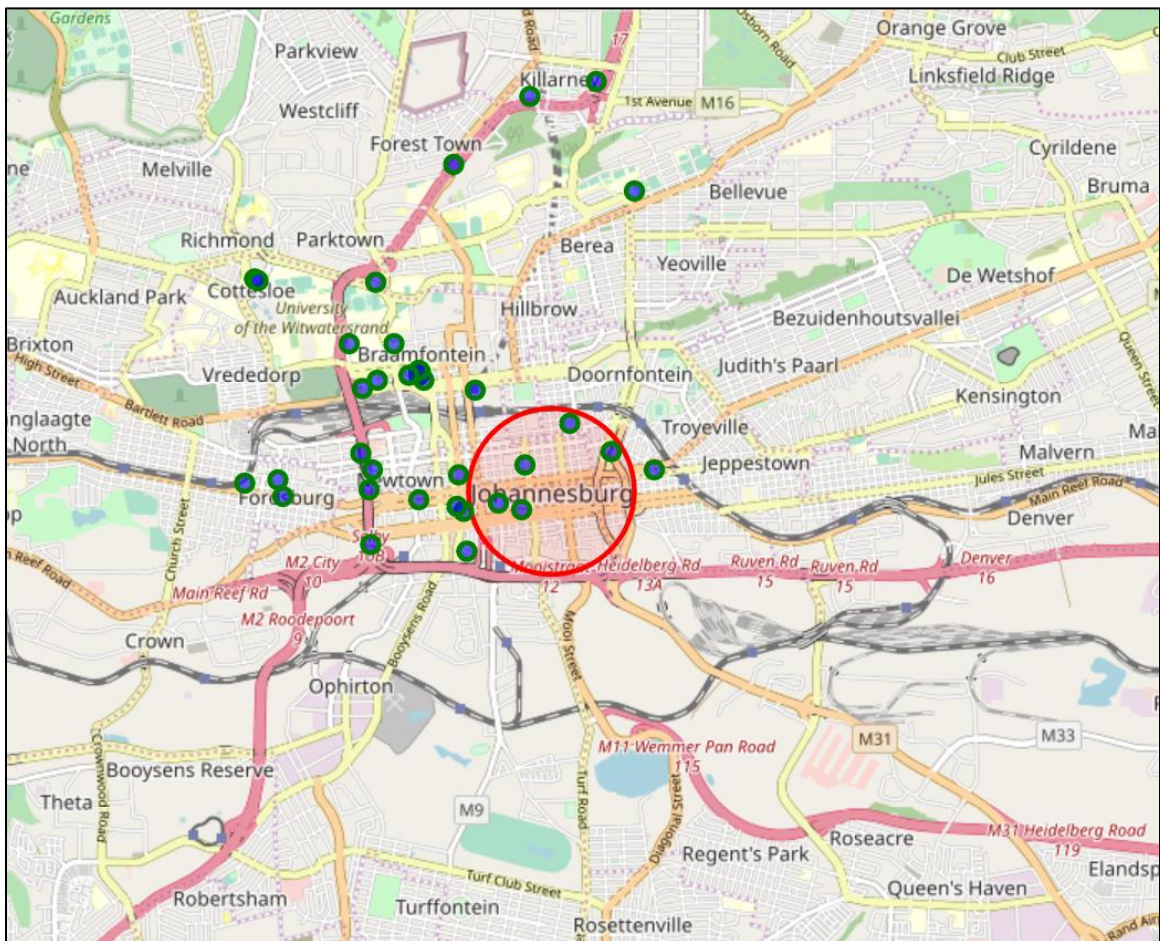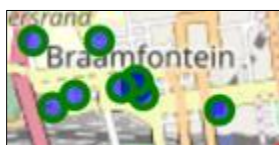
RESULTS

COFFEE SHOPS

Johannesburg

Within the area of Johannesburg, we searched for Coffee within a given radius and plotted the points on the following MAP:

From the MAP we notice that the markers are concentrated on the Braamfontein district, which is predominantly offices.

The total number of venues are 35

```
# tranform venues into a dataframe
dataframe = json_normalize(venues)
dataframe.name.count()
```

35

The total number of unique venues are 32

```
df['name'].nunique()
```

32

A list of the coffee shops located in the vicinity:

```
Seattle Coffee Company                                                                                    3
Kaldi's Coffee                                                                                            2
Trams Coffee Shop                                                                                         1
Hollard Coffee Shop                                                                                       1
Time Out Cafe                                                                                             1
Coffee Brew                                                                                               1
Urban Coffee                                                                                              1
Coffee World                                                                                              1
Cramers Coffee                                                                                            1
Rush Coffee House                                                                                         1
Indian Coffee House                                                                                       1
Okoa Coffee Co.                                                                                           1
Woolworths Coffee Shop                                                                                    1
@The coffee shop                                                                                          1
Greenberry Frozen Yogurt And Coffee Bar                                                                   1
GALATA BAKERY&COFFEE                                                                                      1
Pino's Italian Coffee Shop                                                                                1
Nilah's Coffee Shop & Bakery, Trocadero Centre, Observatory, Johannesburg/ Jozi, South Africa/ ZA        1
Double Shot Tea & Coffee                                                                                  1
Coffee shop                                                                                               1
Bean There Coffee                                                                                         1
Firebird Coffee                                                                                           1
Indaba Coffee Shop                                                                                        1
Shape Coffee shop & Event Studio                                                                          1
Craft Coffee Newtown                                                                                      1
Bean There Coffee Roastery                                                                                1
Father Coffee                                                                                             1
Tarantino's Coffee Co                                                                                     1
chaywa coffee                                                                                             1
Motherland Coffee Company                                                                                 1
Hei Coffee                                                                                                1
Nilde's Coffee Shop                                                                                       1
```
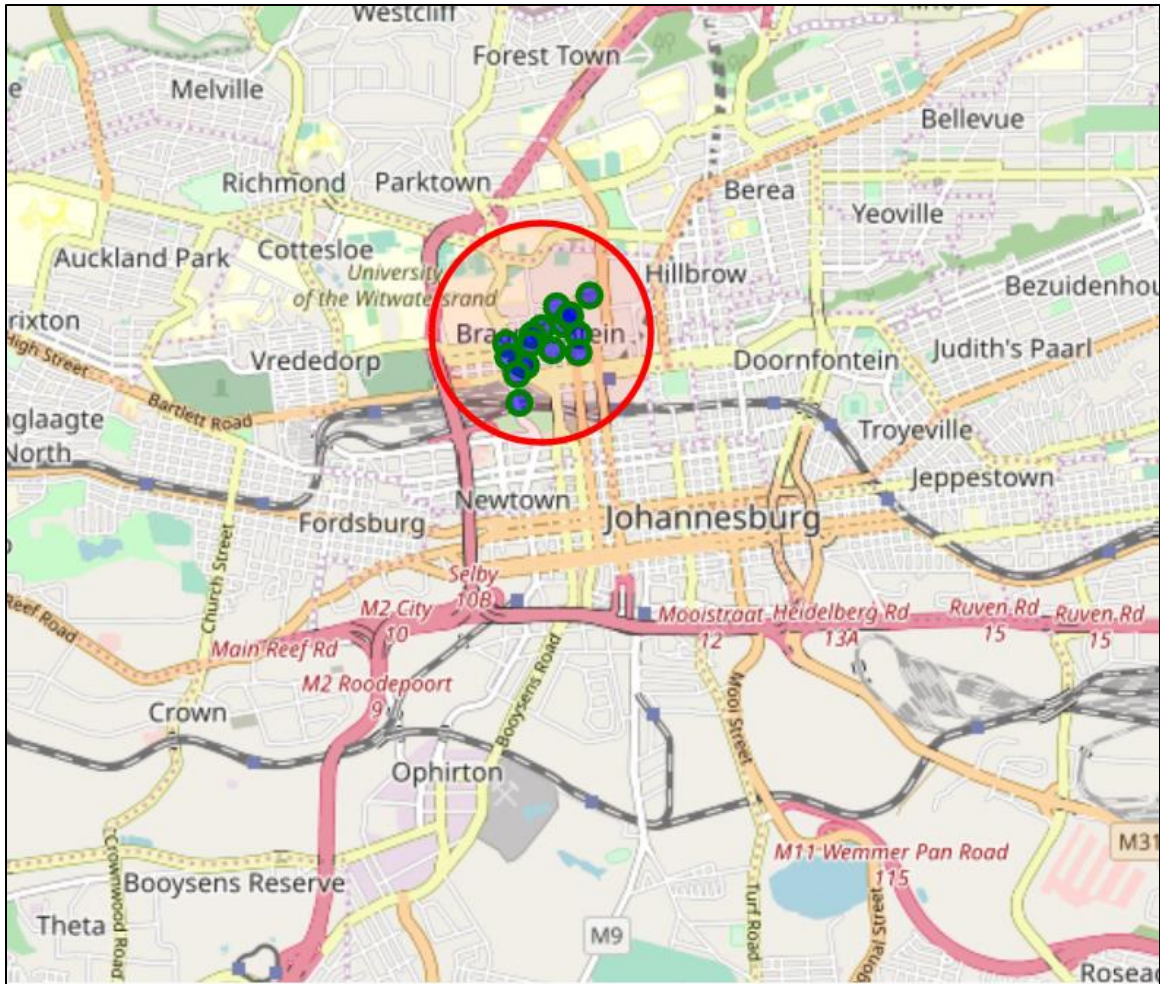
So, then we explored the Braamfontein area more deeply to investigate the type of offices located nearby:

```
Post Office                                      2
Play Braamfontein Office                         1
Real People Offices                              1
DA Gauteng Provincial Office                     1
Pikitup Head Office                              1
Nu Metro Cinemas Head Office                     1
GEMS Office                                      1
Bidvest Bank Head Office                         1
The Joburg Theatre Complex                       1
Satawu Head Office (Satawu House)                1
south africa postal office braamfontein          1
Nino's - Head Office                             1
JD Group Head Office                             1
City of Joburg - Region B Offices                1
Prefontaine Office                               1
Lyceum Correspondence College - Head Office      1
```

16 offices are in this area with 17 different types of categories.

From the list we notice that Seattle Coffee is at the highest with 2 stores
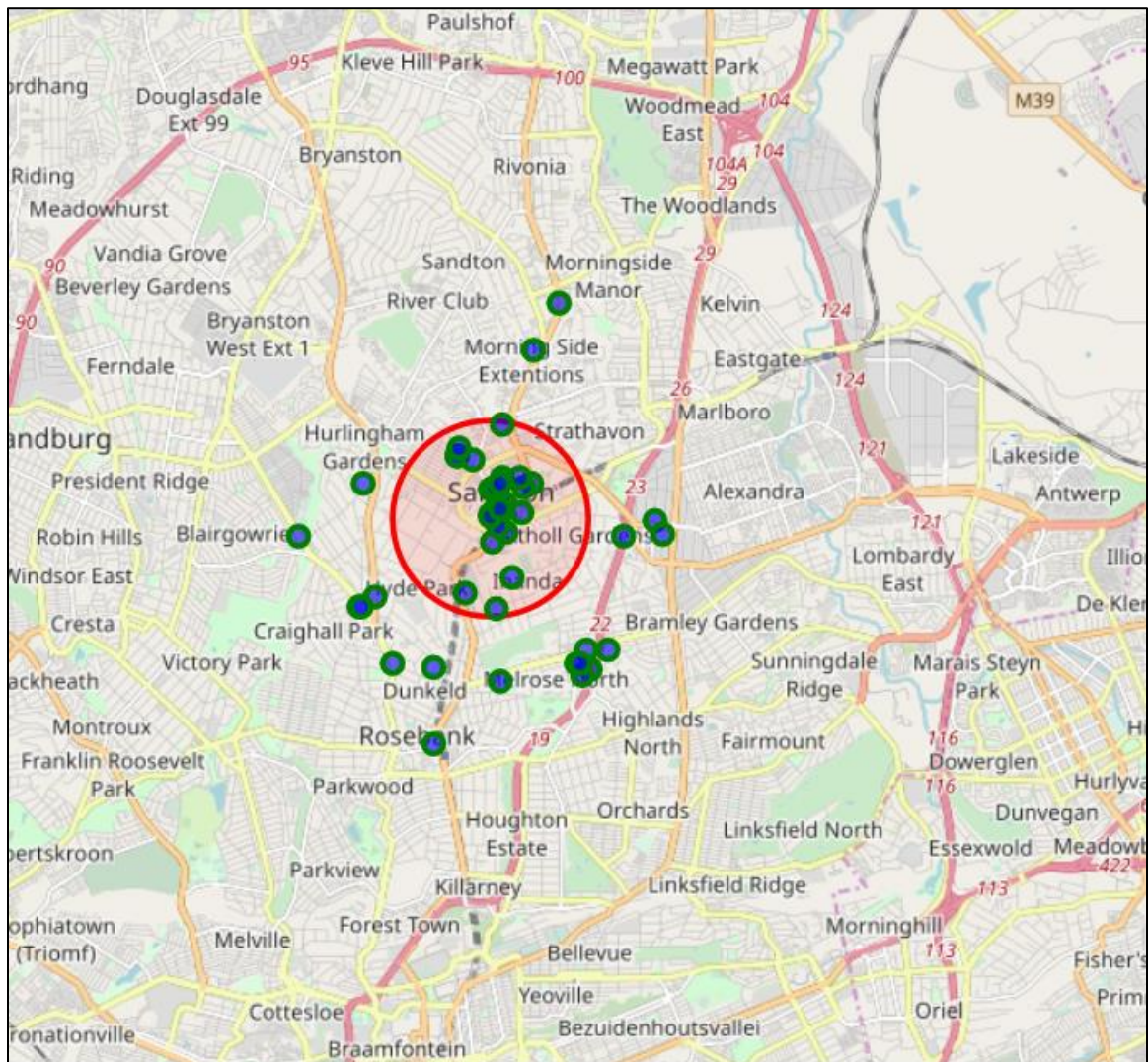
```
df['name'].nunique()

16
```

```
df['categories'].count()

17
```

The same investigations will continue for the remainder 2 districts called Sandton city and Pretoria:

Sandton City

```
Seattle Coffee Company                                                              8
Motherland Coffee Company                                                           4
Naked Coffee                                                                        3
Coffee Exchange                                                                     2
Ron's Coffee St Davids                                                              1
Cofinesse Coffee Kiosk                                                              1
Aura 'Coffee Excellence'                                                            1
Discovery Head Office                                                               1
Colony Pharmacy                                                                     1
The Gourmet Garage Sandton burgers, steak, ribs, poultry great beers and coffee     1
EatFresh coffee shop                                                                1
Hodges Coffee House                                                                 1
Brazilian Coffee Shop                                                               1
House Of Coffees                                                                    1
Me Gusta Coffee Shop                                                                1
Coffee Unplugged                                                                    1
Laylas Coffee                                                                       1
The Grind Coffee Company                                                            1
Motherland Coffee                                                                   1
Exclusive Books                                                                     1
Coffee Couture                                                                      1
Frontier Coffee Vending International                                               1
Motherland Coffee Company - Standard Bank                                           1
Coffee Machine                                                                      1
Soft Coffee                                                                         1
Fego coffeetogo                                                                     1
Rococo Lounge                                                                       1
House Of Coffees Hot Dog Stand                                                      1
Coffeecouture                                                                       1
Fitness Coffee                                                                      1
The Oval Coffee Bar                                                                 1
Motherland Coffee - Hyde Park Lane                                                  1
Silvana's Coffee Shop                                                               1
Name: name, dtype: int64
```
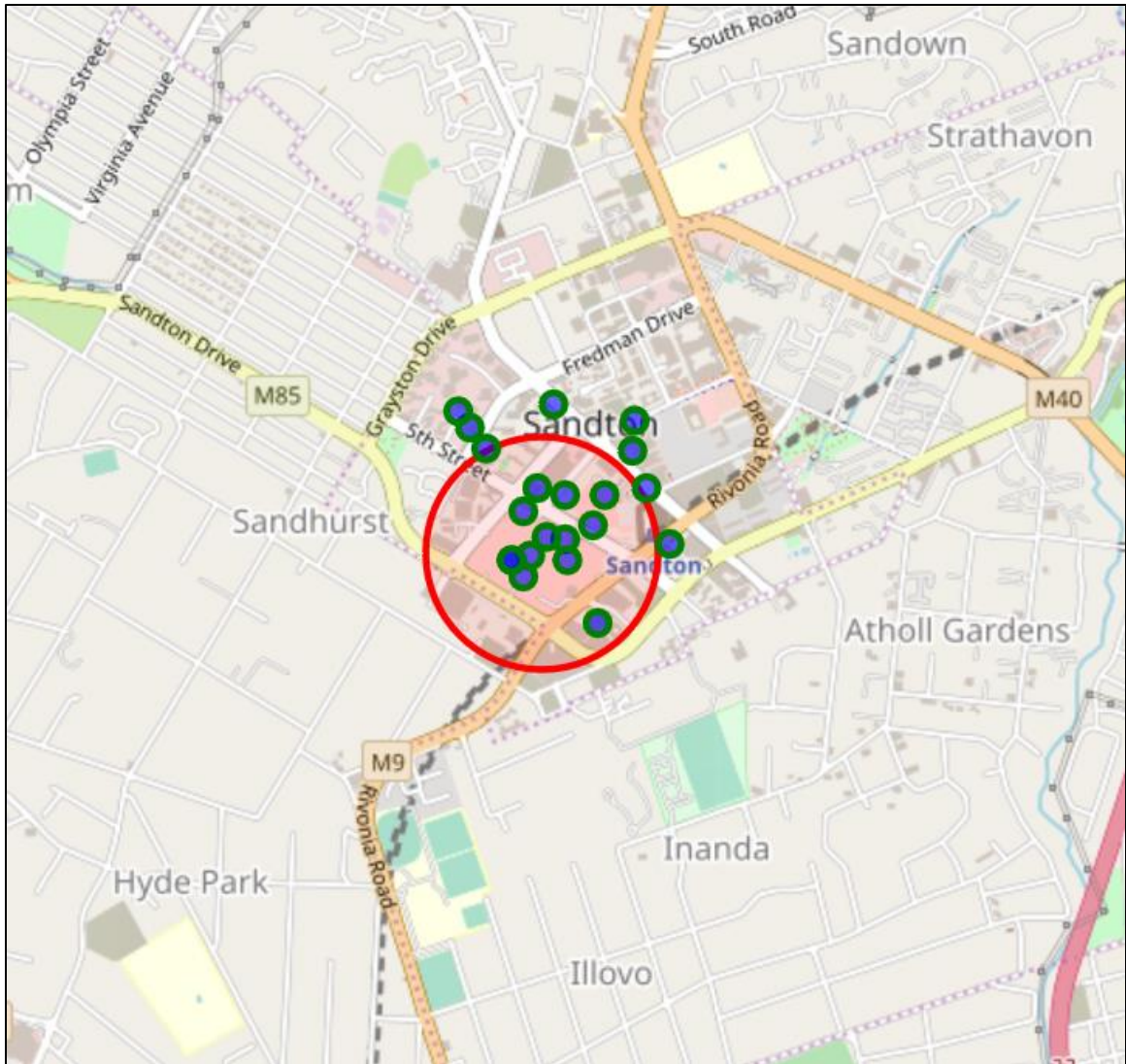
```
df['name'].nunique()
```
33

```
df['categories'].count()
```
46

9

```
Post Office                                          3
Empowerdex Head Office                               1
Mercantile Bank Head Office                          1
华迅商务 South Africa Office                              1
Netcare Head Office                                  1
@ The Office                                          1
NCR South Africa office                              1
Discovery Head Office                                1
Sandton TTAF Office                                  1
CATHSSETHA Offices                                   1
Sandton City Management Offices                      1
Arthur Kaplin Sandton Office                         1
Sandton City Office Tower                            1
Baglios - Head Office                                1
NOSA - Head Office                                   1
South African Gold Coin Exchange - Head Office       1
Alexander Forbes new offices                         1
Sun International Head Office                         1
Sandton City Project Office                          1
Name: name, dtype: int64
```
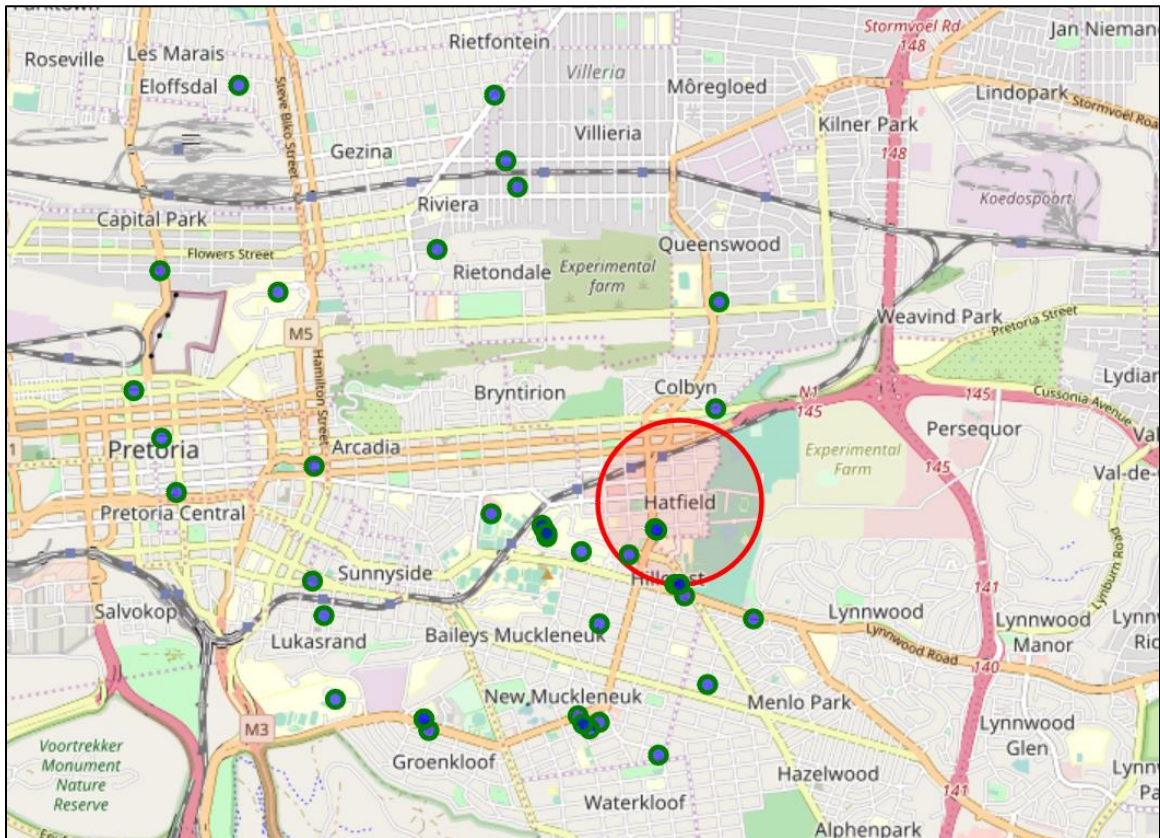
df['name'].nunique()	df['categories'].count()
19	21

Pretoria- Hatfield

```
  Seattle Coffee Company                          2
  Haloa Coffee                                    2
  Coffee @ Capital                                1
  Brew & Brunch Coffee  Cafe                      1
  Hillcrest Coffee Cafe                           1
  Coffee at Burgundy's Restaurant (Sunnyside)     1
  House Of Coffees Eugene Marais                  1
  Brooklyn mall Seattle coffee shop               1
  Pebbles Coffee Bar and Restaurant               1
  Fribela Coffee                                  1
  Zuid Afrikaanse Hospitaal Coffee Shop           1
  Wiesenhof Coffees                               1
  Coffee Junction                                 1
  The Coffee Company                              1
  Zafferano Coffee Shop                           1
  Seattle Coffee Co.                              1
  JULIEBEAN COFFEE                                1
  Seattle Coffee Co                               1
  Coffee @ The Link                               1
  The Daily Coffee Café Waterkloof                1
  Seatle Coffee Company Brooklyn                  1
  TriBeCa Coffee Shop                             1
  Sub and Coffee bar                              1
  Coffee At The Little Link                       1
  Carls Coffee Roastery                           1
  Algoa Bay Coffees                               1
  The Coffee Cafe                                 1
  haloa coffee                                    1
  Hub (UP off Campus Coffee)                      1
  Wiesenhof Coffee Shop                           1
  Indian Coffee Bar                               1
  Coffee At Burgundys                             1
  Haloa coffee co                                 1
  TriBeCa Campus                                  1
  Aroma Gourmet Coffee Roasters                   1
  Coffee Cafe                                     1
  Coffee Buzz                                     1
  Name: name, dtype: int64
```
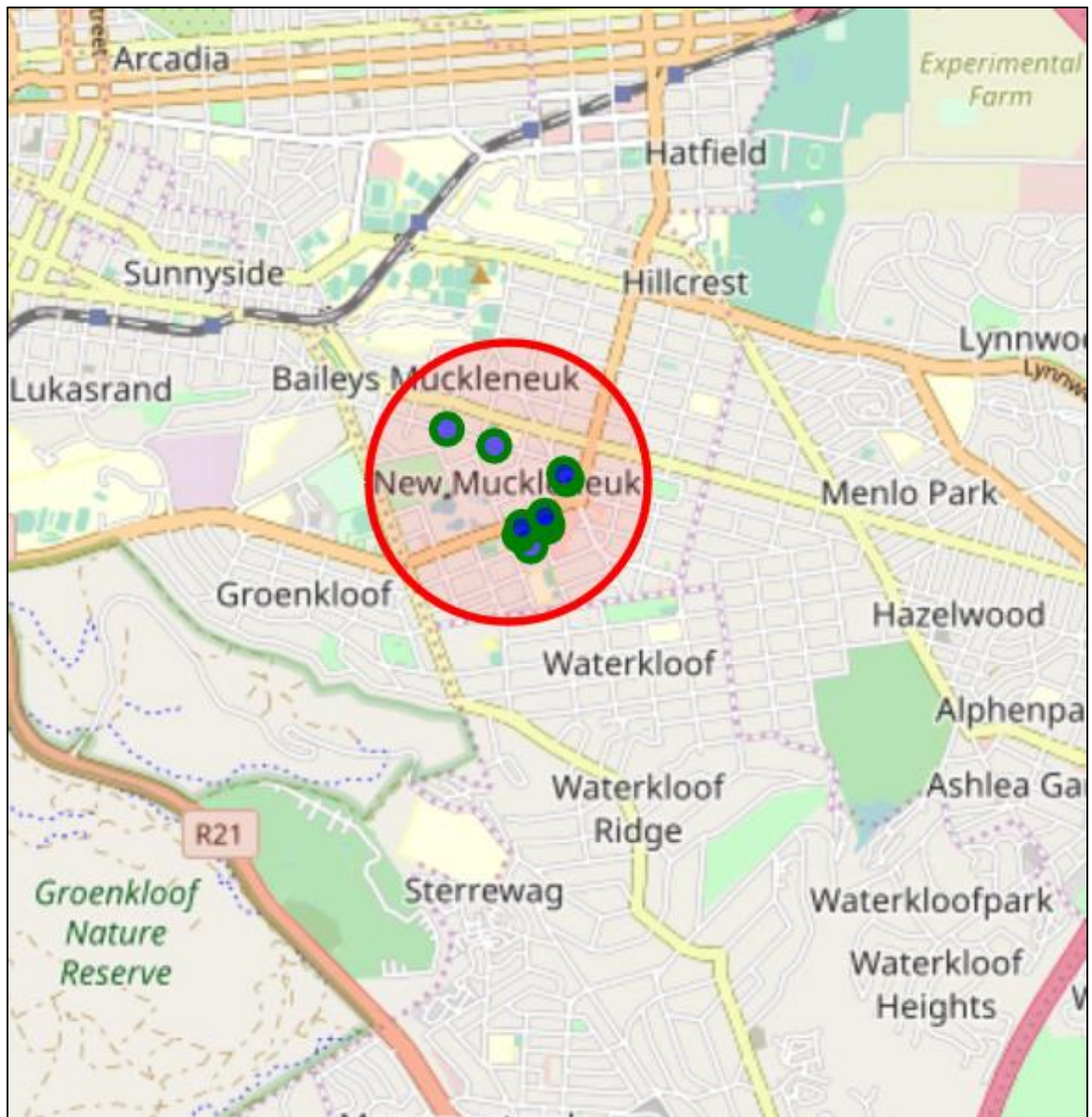
df['name'].nunique()	df['categories'].count()
37	39

13

```
Post Office                         1
Thomas International pta offices    1
Brookfield Office Prk               1
Brooklyn Office Park                1
Brookfield Offices                  1
SARS Head Office                    1
RtR Regional Office                 1
Brooklyn Post Office                1
Parioli Office Park                 1
Harlequins Office Park              1
```
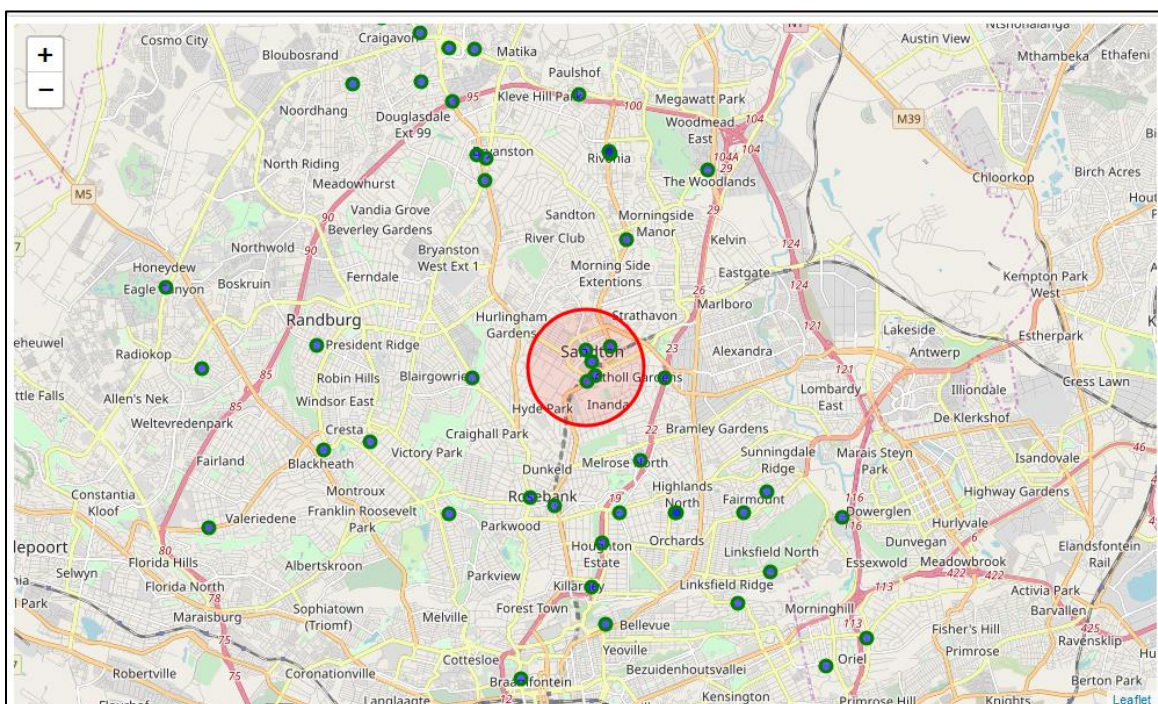
```
df['name'].nunique()          df['categories'].count()

10                            10
```

All coffee shops in Central Gauteng

This Map explores all Coffee shops around the Greater Gauteng to look at distribution of business.


```
dataframe = json_normalize(venues)      df['name'].nunique()
# tranform venues into a dataframe
dataframe = json_normalize(venues)
dataframe.name.count()                  11

50
```

```
Seattle Coffee Company                 38
Seattle Coffee                          3
Seattle                                 1
Seattle coffee Caltex Linksfield        1
Seattle Rivonia                         1
Seattle Coffee Genesis                  1
Seattle Coffee@Caltex                   1
Seattle Coffee @ Caltex Rabie Street    1
Seattle Coffee Co. Mobile               1
Exclusive Books                         1
Seattle Fourways                        1
```

A quick review of the tips

	text	agreeCount	disagreeCount
0	they've got ice~~ if u want a nice ice latte not a blend jus ask to add ice and wallah! ice latte; vanilla my fave!	0	0

DISCUSSION

The different types of coffee vendors

The data demonstrates that there are many different coffee vendors located throughout the Gauteng province. This says that any entrepreneur who starts a business can create a new coffee shop with their own business model and have the possibility to yield moderate success as the local taste for artisan coffee remains quite high. There are however Franchises at play, firstly the Seattle Coffee Company is the most popular international coffee chain and is successful amongst the locals. Moreover, Motherland Coffee is a local franchise that is gaining traction.

Different types of offices

Throughout the office and financial district investigation it can be noted that coffee shops are of course clustered more densely where there are a number of different offices eg Braamfontien (Johannesburg) as opposed to Mekleneuk (Pretoria).

Dispersion vs localization

In the map we seen that coffee shops are dispersed quite well around Gauteng which could mean that coffee purchases are popular in the residential suburbs as well.

User tips for menu items

The tips are really helpful although foursquare limits the queries and outcomes, we note that coffee as a warm drink with milk is not the only favorite but iced coffee is yet another commodity that can drive revenue in hot summers.

Foursquare data accuracy

The data accuracy of the API is not one to accept as true as a real world scenario. In light of there being no Starbucks in sight which is almost two years old, t does tell us that the crowdsourced information is dated. Google maps will be the location based API of choice.

CONCLUSION

It can be deemed that this data provides insight into coffee shop location for the rest of South Africa and more specifically financial hubs. Our client has the choice of an international franchise, a local franchise or a new coffee startup. In addition, the client can look at the densely populated financial districts or view a diffused approach by locating the business in the residential suburbs. The client then has a choice to use the location tips to redefine drink menus as needed. Overall its worthwhile mentioning that the crowdsourced information provided by Foursquare is dated and google API would be the location-based data API of choice for South Africa.