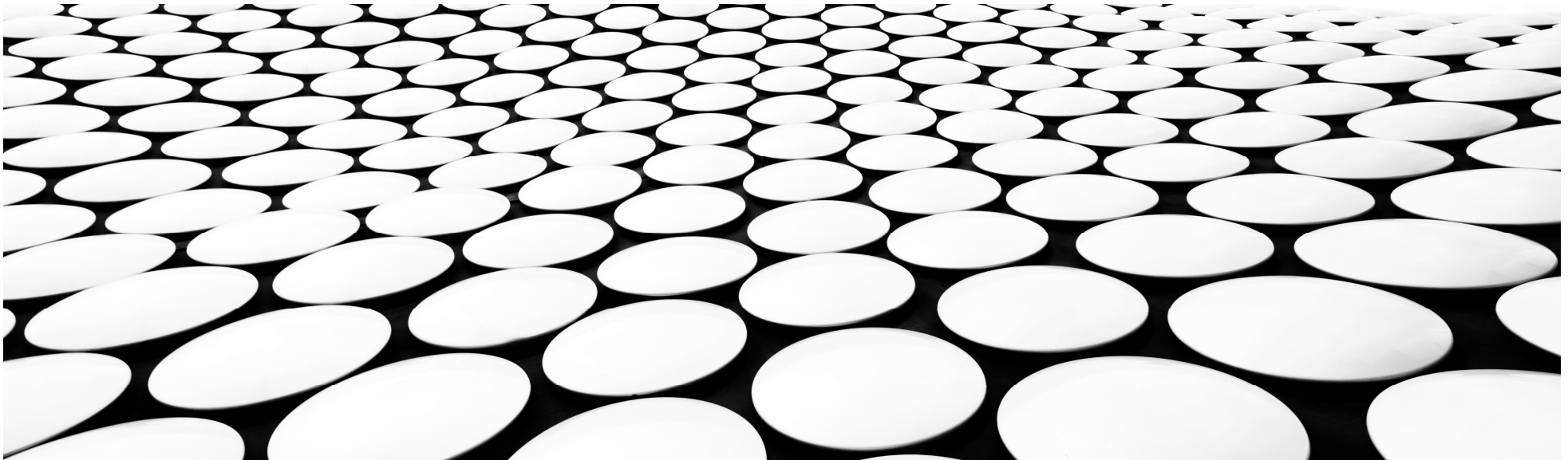

***ESTABLISHING ADDITIONAL
GROCERY STORES IN THE DISTRICTS OF MANILA***
COURSERA CAPSTONE
APPLIED DATA SCIENCE CAPSTONE (IBM)

ALLEN PATRICK F. CABIGAN





OBJECTIVE OF THE RESEARCH

- This paper aims to identify Districts or clusters in Manila where interested stakeholders can establish grocery stores with optimal profits;



PYTHON LIBRARIES UTILIZED

- PANDAS
- NUMPY
- JSON
- GEOPY
- BEAUTIFUL SOUP
- SKLEARN
- FOLIUM
- FOURSQUARE API

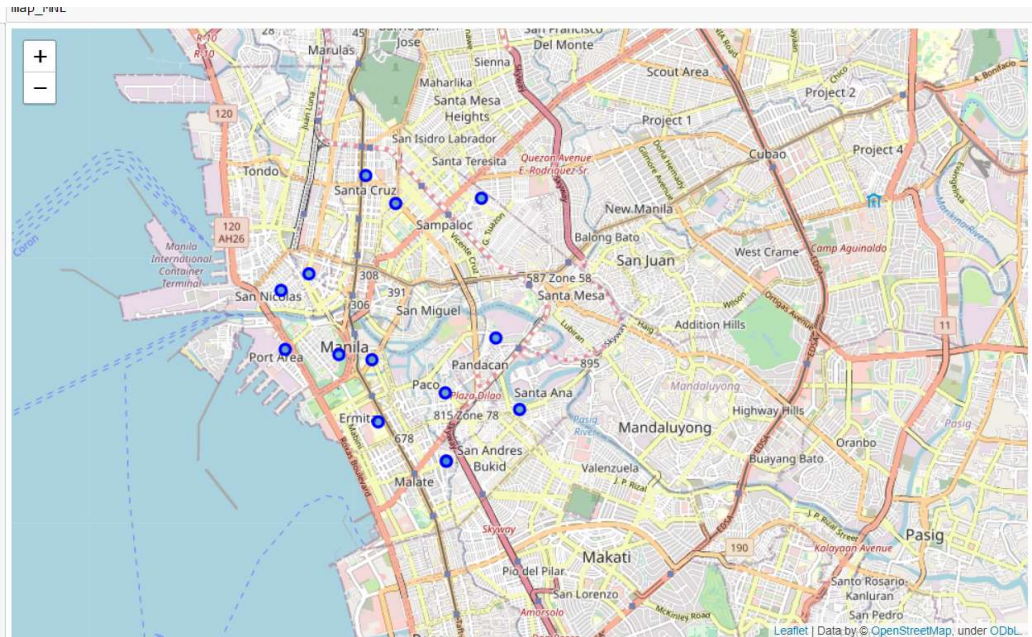
DATA AND METHODOLOGY

- Data Source: <https://en.wikipedia.org/wiki/Manila> – used BeautifulSoup to parse the Districts
- Data Acquired
 - Districts of Manila
 - Coordinates via Geocoder
 - Map of Manila with plotted Districts via Folium
 - Clustered Districts via SKLearn
 - Venues related to grocery stores via Four Square API

THE DISTRICT AND ITS COORINATES

	District	Latitude	Longitude
0	Binondo	14.602370	120.974070
1	Ermita, Manila	14.578630	120.985550
2	Intramuros	14.589480	120.979030
3	Malate, Manila	14.572210	120.996820
4	Paco, Manila	14.583170	120.996640
5	Pandacan, Manila	14.592120	121.005090
6	Port Area, Manila	14.590220	120.970060
7	Quiapo, Manila	14.588640	120.984540
8	Sampaloc, Manila	14.613700	120.988540
9	San Andres, Manila	14.572219	120.996821
10	San Miguel, Manila	14.614556	121.002770
11	San Nicolas, Manila	14.599640	120.969370
12	Santa Ana, Manila	14.580580	121.009130
13	Santa Cruz, Manila	14.618100	120.983570

MAP OF MANILA GENERATED BY FOLIUM



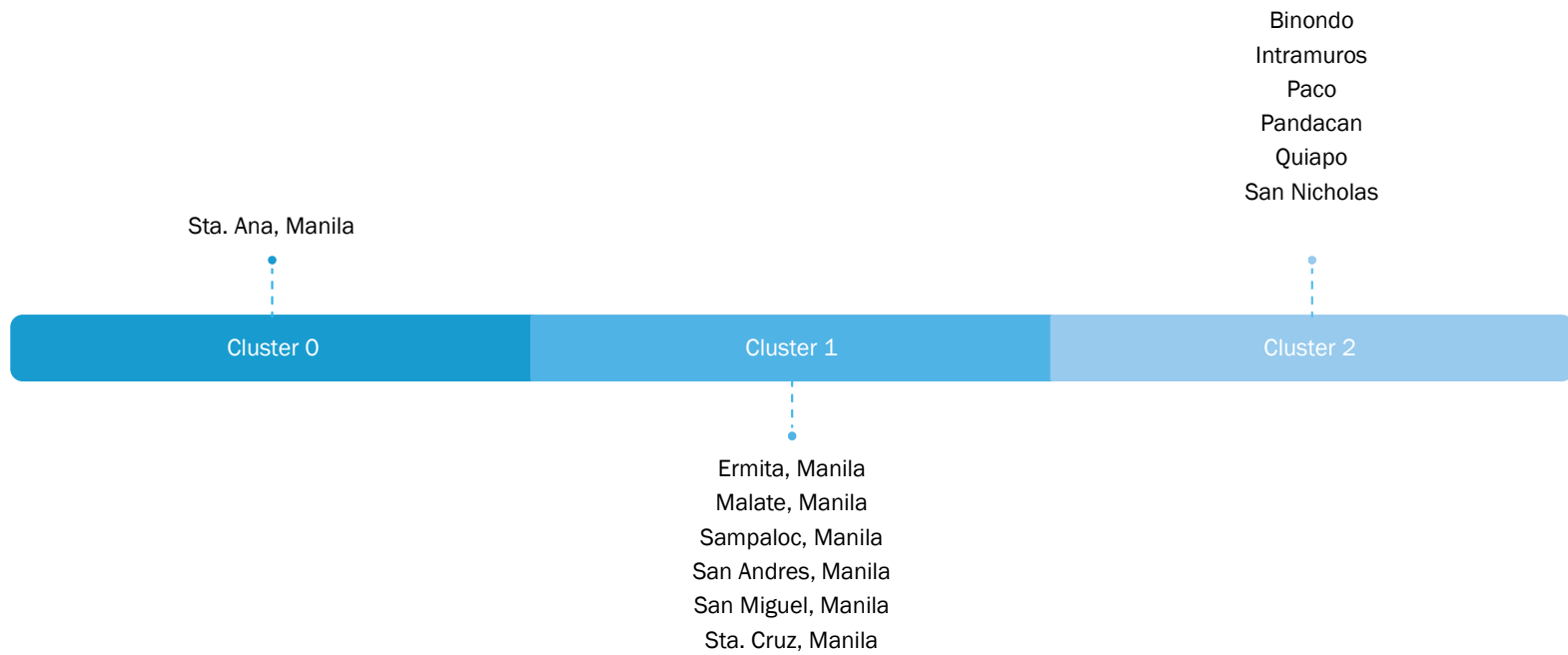
CLUSTERED DISTRICTS AS A RESULT OF FOURSQUARE API AND SKLEARN

	District	Grocery Store	Cluster Labels	Latitude	Longitude
12	Santa Ana, Manila	0.02	0	14.58058	121.00913

	District	Grocery Store	Cluster Labels	Latitude	Longitude
1	Ermita, Manila	0.0	1	14.578630	120.985550
3	Malate, Manila	0.0	1	14.572210	120.996820
8	Sampaloc, Manila	0.0	1	14.613700	120.988540
9	San Andres, Manila	0.0	1	14.572219	120.996821
10	San Miguel, Manila	0.0	1	14.614556	121.002770
13	Santa Cruz, Manila	0.0	1	14.618100	120.983570

	District	Grocery Store	Cluster Labels	Latitude	Longitude
0	Binondo	0.010000	2	14.60237	120.97407
2	Intramuros	0.010000	2	14.58948	120.97903
4	Paco, Manila	0.010000	2	14.58317	120.99664
5	Pandacan, Manila	0.012821	2	14.59212	121.00509
6	Port Area, Manila	0.013514	2	14.59022	120.97006
7	Quiapo, Manila	0.010000	2	14.58864	120.98454
11	San Nicolas, Manila	0.010000	2	14.59964	120.96937

DISTRICTS PER CLUSTER



CONCLUSION

- After prepping and analyzing the data, this paper is confident to recommend that any businessman or property developer can profit from additional grocery stores in any of the Districts of Manila. But for optimal returns, we suggest that the interested stakeholders prioritize development in **Cluster 1** since, there is no available grocery store in the area. Though there is a limited number present in **Cluster 2**, establishing additional grocery stores will still result in gains.