I. Introduction

A. Description & Discussion of the Background

The National Capital Region of the Philippines (NCR) or more commonly known as Metro Manila is the largest of the three metropolitan areas in the Philippines where almost 13 million people live in a 619.57 square kilometer area.[1][2][3] These numbers make Metro Manila the most densely populated region in the Philippines and the 5th most populous urban area in the world.[4]

As a metropolitan area, it houses thousands of businesses, which means business owners needs to be smart where to place their businesses. Clustering the different areas in the region and identifying the characteristics of the customers in those areas would help businesses to efficiently target their customers. Clustering the different areas in Metro Manila would also help people who want to migrate to the different areas in the region by having more information about the area the want to settle in.

This paper aims to create a map and an information chart about the different types of areas/neighborhood in Metro Manila according to the venues and businesses established using Clustering.

B. Data

To produce the Clustering Model, the following datasets were used:

1. List of Areas in Metro Manila. From Wikipedia. [5]
2. Details and types of the venues in Metro Manila using FourSquare API
3. Geospatial data of the areas in Metro Manila using Nominatim API

The details and other information of the venues in Metro Manila gathered from FourSquare will be the main feature to describe the areas in Metro Manila. The geospatial data is composed of the latitude and longitude coordinates of the areas in Metro Manila and will be used to locate where those areas are in the map.

References

 [1] [*"Presidential Decree No. 824 November 7, 1975"*](http://www.lawphil.net/statutes/presdecs/pd1975/pd_824_1975.html). lawphil.net. [*Arellano Law Foundation*](https://en.wikipedia.org/wiki/Arellano_University). *Retrieved April 15,2020*.

[2] Census of Population (2015). [*"National Capital Region (NCR)"*](https://www.psa.gov.ph/sites/default/files/attachments/hsd/pressrelease/NCR.xlsx). Total Population by Province, City, Municipality and Barangay. [*PSA*](https://en.wikipedia.org/wiki/Philippine_Statistics_Authority)*. Retrieved April 15,2020*.

[3] "Presidential Decree No. 824". chanrobles.com. Chan Robles Virtual Law Library. Archived from the original on October 6, 2017. Retrieved *April 15,2020*.

[4] https://en.wikipedia.org/wiki/List\_of\_largest\_cities

[5] https://en.wikipedia.org/wiki/List\_of\_ZIP\_codes\_in\_the\_Philippines