

Coursera Capstone

IBM Applied Data Science Capstone Week #4

Part 1

INTRODUCTION, BACKGROUND, AND METHODOLOGY

OPENING COFFEE SHOPS IN BOGOR – WEST JAVA, INDONESIA

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Introduction

Coffee shops have become a trend in the market nowadays. With young people spent their time mostly hang out to acquaint friends or business in informal places. With not only serving the coffee but also provide a cozy and unique working space for young professionals, opening a business for coffee shop become exciting in terms of profit.

The property owner can use their space for coffee shops to gain more profits while also maintain their assets. However, despite the higher gain and market and also short term payback period, coffee shops often find difficulties gaining their customers due to their locations. Locations also affect to their market size.

The locations of coffee shops also will depend on how much is the competitors in the area; this will also impact the profit and market of the coffee shops. The locations need to be carefully decided with some considerations (i.e: Nearby to offices, malls, college area, etc.)

This capstone objective is to analyze and select the best location of coffee shops in Bogor, a city in West Java Indonesia. The locations were selected because Bogor is one of the satellite city of Jakarta (capital and main business place in Indonesia). The development of the area is rapid and mostly at the weekend people are spending the time outdoor.

Objectives

This capstone objective is to analyze and select the best location of coffee shops in Bogor, a city in West Java Indonesia. The locations were selected because Bogor is one of the satellite city of Jakarta (capital and main business place in Indonesia). The development of the area is rapid and mostly at the weekend people are spending the time outdoor.

Methodology

The research will use data science methodology and machine learning techniques like clustering method. Data that will be used is based on the Wikipedia (https://id.wikipedia.org/wiki/Kota_Bogor) to get the list of the subdistrict in Bogor by

using web scraping technique using BeautifulSoup. To obtain the geospatial (latitude and longitude), we will use the geopy.

The data of locations then are used as a reference to foursquare to get the venue data for those neighborhoods. working with API (Foursquare), data cleaning, data wrangling, to machine learning (K-means clustering) and map visualization (Folium) to get the results.

Data Preparations

I. Web Scraping data Wikipedia

[illegible]

```
In [7]: # find table
My_table = soup.find('table',{'class':'wikitable sortable'})
My_table
```

```
Out[7]: <table class="wikitable sortable" width="100%">
<tbody><tr style="background-color: #ccc;" valign="top">
<th>Kode <br/>Kemendagri</th>
<th>Kecamatan</th>
<th>Jumlah <br/>Kelurahan</th>
<th>Status</th>
<th>Daftar <br/>Kelurahan
</th></tr>
<tr valign="top">
<td>32.71.04
</td>
<td><a href="/wiki/Bogor_Barat,_Bogor" title="Bogor Barat, Bogor">Bogor Barat</a></td>
<td align="center">16</td>
<td>Kelurahan</td>
<td><div class="hlist">
<ul><li><a class="new" href="/w/index.php?title=Balungbang_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Balun
gbang Jaya, Bogor Barat, Bogor (halaman belum tersedia)">Balungbang Jaya</a></li>
<li><a href="/wiki/Bubulak,_Bogor_Barat,_Bogor" title="Bubulak, Bogor Barat, Bogor">Bubulak</a></li>
<li><a href="/wiki/Cilendek_Barat,_Bogor_Barat,_Bogor" title="Cilendek Barat, Bogor Barat, Bogor">Cilendek Barat</a></li>
<li><a href="/wiki/Cilendek_Timur,_Bogor_Barat,_Bogor" title="Cilendek Timur, Bogor Barat, Bogor">Cilendek Timur</a></li>
<li><a href="/wiki/Curug,_Bogor_Barat,_Bogor" title="Curug, Bogor Barat, Bogor">Curug</a></li>
<li><a class="new" href="/w/index.php?title=Curug_Mekar,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Curug Mekar,
Bogor Barat, Bogor (halaman belum tersedia)">Curug Mekar</a></li>
<li><a class="new" href="/w/index.php?title=Gunung_Batu,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Gunung Batu,
Bogor Barat, Bogor (halaman belum tersedia)">Gunung Batu</a></li>
<li><a href="/wiki/Loji,_Bogor_Barat,_Bogor" title="Loji, Bogor Barat, Bogor">Loji</a></li>
<li><a class="new" href="/w/index.php?title=Marga_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Marga Jaya, Bo
gor Barat, Bogor (halaman belum tersedia)">Marga Jaya</a></li>
<li><a href="/wiki/Menteng,_Bogor_Barat,_Bogor" title="Menteng, Bogor Barat, Bogor">Menteng</a></li>
<li><a class="new" href="/w/index.php?title=Pasir_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Jaya, Bo
gor Barat, Bogor (halaman belum tersedia)">Pasir Jaya</a></li>
<li><a class="new" href="/w/index.php?title=Pasir_Kuda,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Kuda, Bo
gor Barat, Bogor (halaman belum tersedia)">Pasir Kuda</a></li>
<li><a class="new" href="/w/index.php?title=Pasir_Mulya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Mulya,
Bogor Barat, Bogor (halaman belum tersedia)">Pasir Mulya</a></li>
<li><a href="/wiki/Semplak,_Bogor_Barat,_Bogor" title="Semplak, Bogor Barat, Bogor">Semplak</a></li>
<li><a class="new" href="/w/index.php?title=Sindang_Barang,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Sindang Ba
rang, Bogor Barat, Bogor (halaman belum tersedia)">Sindang Barang</a></li>
<li><a class="new" href="/w/index.php?title=Situ_Gede,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Situ Gede, Bogor
Barat, Bogor (halaman belum tersedia)">Situ Gede</a></li>
</ul></div>
</td></tr>
</tbody></table>
```

```
In [9]: # get table data from website
links = My_table.findAll('a')
links
```

```
Out[9]: [<a href="/wiki/Bogor_Barat,_Bogor" title="Bogor Barat, Bogor">Bogor Barat</a>,
<a class="new" href="/w/index.php?title=Balungbang_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Balungbang J
aya, Bogor Barat, Bogor (halaman belum tersedia)">Balungbang Jaya</a>,
<a href="/wiki/Bubulak,_Bogor_Barat,_Bogor" title="Bubulak, Bogor Barat, Bogor">Bubulak</a>,
<a href="/wiki/Cilendek_Barat,_Bogor_Barat,_Bogor" title="Cilendek Barat, Bogor Barat, Bogor">Cilendek Barat</a>,
<a href="/wiki/Cilendek_Timur,_Bogor_Barat,_Bogor" title="Cilendek Timur, Bogor Barat, Bogor">Cilendek Timur</a>,
<a href="/wiki/Curug,_Bogor_Barat,_Bogor" title="Curug, Bogor Barat, Bogor">Curug</a>,
<a class="new" href="/w/index.php?title=Curug_Mekar,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Curug Mekar, Bog
or Barat, Bogor (halaman belum tersedia)">Curug Mekar</a>,
<a class="new" href="/w/index.php?title=Gunung_Batu,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Gunung Batu, Bog
or Barat, Bogor (halaman belum tersedia)">Gunung Batu</a>,
<a href="/wiki/Loji,_Bogor_Barat,_Bogor" title="Loji, Bogor Barat, Bogor">Loji</a>,
<a class="new" href="/w/index.php?title=Marga_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Marga Jaya, Bogor
Barat, Bogor (halaman belum tersedia)">Marga Jaya</a>,
<a href="/wiki/Menteng,_Bogor_Barat,_Bogor" title="Menteng, Bogor Barat, Bogor">Menteng</a>,
<a class="new" href="/w/index.php?title=Pasir_Jaya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Jaya, Bogor
Barat, Bogor (halaman belum tersedia)">Pasir Jaya</a>,
<a class="new" href="/w/index.php?title=Pasir_Kuda,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Kuda, Bogor
Barat, Bogor (halaman belum tersedia)">Pasir Kuda</a>,
<a class="new" href="/w/index.php?title=Pasir_Mulya,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Pasir Mulya, Bog
or Barat, Bogor (halaman belum tersedia)">Pasir Mulya</a>,
<a href="/wiki/Semplak,_Bogor_Barat,_Bogor" title="Semplak, Bogor Barat, Bogor">Semplak</a>,
<a class="new" href="/w/index.php?title=Sindang_Barang,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Sindang Baran
g, Bogor Barat, Bogor (halaman belum tersedia)">Sindang Barang</a>,
<a class="new" href="/w/index.php?title=Situ_Gede,_Bogor_Barat,_Bogor&action=edit&redlink=1" title="Situ Gede, Bogor B
arat, Bogor (halaman belum tersedia)">Situ Gede</a>,
<a href="/wiki/Bogor_Selatan,_Bogor" title="Bogor Selatan, Bogor">Bogor Selatan</a>,
<a class="new" href="/w/index.php?title=Batu_Tulis,_Bogor_Selatan,_Bogor&action=edit&redlink=1" title="Batu Tulis, Bog
or Selatan, Bogor (halaman belum tersedia)">Batu Tulis</a>,
<a class="new" href="/w/index.php?title=Bojong_Kerta,_Bogor_Selatan,_Bogor&action=edit&redlink=1" title="Bojong Kerta,
Bogor Selatan, Bogor (halaman belum tersedia)">Bojong Kerta</a>,
<a href="/wiki/Bondongan,_Bogor_Selatan,_Bogor" title="Bondongan, Bogor Selatan, Bogor">Bondongan</a>,
<a href="/wiki/Cikaret,_Bogor_Selatan,_Bogor" title="Cikaret, Bogor Selatan, Bogor">Cikaret</a>,
<a href="/wiki/Cipaku,_Bogor_Selatan,_Bogor" title="Cipaku, Bogor Selatan, Bogor">Cipaku</a>,
<a href="/wiki/Empang,_Bogor_Selatan,_Bogor" title="Empang, Bogor Selatan, Bogor">Empang</a>,
<a href="/wiki/Genteng,_Bogor_Selatan,_Bogor" title="Genteng, Bogor Selatan, Bogor">Genteng</a>,
<a href="/wiki/Harjasari,_Bogor_Selatan,_Bogor" title="Harjasari, Bogor Selatan, Bogor">Harjasari</a>,
<a href="/wiki/Kertamaya,_Bogor_Selatan,_Bogor" title="Kertamaya, Bogor Selatan, Bogor">Kertamaya</a>,
<a class="new" href="/w/index.php?title=Lawang_Gintung,_Bogor_Selatan,_Bogor&action=edit&redlink=1" title="Lawang Gint
ung, Bogor Selatan, Bogor (halaman belum tersedia)">Lawang Gintung</a>,
<a href="/wiki/Muarasari,_Bogor_Selatan,_Bogor" title="Muarasari, Bogor Selatan, Bogor">Muarasari</a>,
<a href="/wiki/Muluhanda,_Bogor_Selatan,_Bogor" title="Muluhanda, Bogor Selatan, Bogor">Muluhanda</a>]
```

```
In [10]: #create table for data frame
Subdistric = []
for link in links:
    Subdistric.append(link.get('title'))
print(Subdistric)

['Bogor Barat, Bogor', 'Balungbang Jaya, Bogor Barat, Bogor (halaman belum tersedia)', 'Bubulak, Bogor Barat, Bogor', 'Cilendek Barat, Bogor Barat, Bogor', 'Cilendek Timur, Bogor Barat, Bogor', 'Curug, Bogor Barat, Bogor', 'Curug Mekar, Bogor Barat, Bogor (halaman belum tersedia)', 'Gunung Batu, Bogor Barat, Bogor (halaman belum tersedia)', 'Loji, Bogor Barat, Bogor', 'Marga Jaya, Bogor Barat, Bogor (halaman belum tersedia)', 'Menteng, Bogor Barat, Bogor', 'Pasir Jaya, Bogor Barat, Bogor (halaman belum tersedia)', 'Pasir Kuda, Bogor Barat, Bogor (halaman belum tersedia)', 'Pasir Mulya, Bogor Barat, Bogor (halaman belum tersedia)', 'Semplak, Bogor Barat, Bogor', 'Sindang Barang, Bogor Barat, Bogor (halaman belum tersedia)', 'Situ Gede, Bogor Barat, Bogor (halaman belum tersedia)', 'Bogor Selatan, Bogor', 'Batu Tulis, Bogor Selatan, Bogor (halaman belum tersedia)', 'Bojong Kerta, Bogor Selatan, Bogor (halaman belum tersedia)', 'Bondongan, Bogor Selatan, Bogor', 'Cikaret, Bogor Selatan, Bogor', 'Cipaku, Bogor Selatan, Bogor', 'Empang, Bogor Selatan, Bogor', 'Genteng, Bogor Selatan, Bogor', 'Harjasari, Bogor Selatan, Bogor', 'Kertama ya, Bogor Selatan, Bogor', 'Lawang Gintung, Bogor Selatan, Bogor (halaman belum tersedia)', 'Muasari, Bogor Selatan, Bogor', 'Mulyaharja, Bogor Selatan, Bogor', 'Pakuan, Bogor Selatan, Bogor', 'Pamoyanan, Bogor Selatan, Bogor', 'Rancamaya, Bogor Selatan, Bogor', 'Ranggamekar, Bogor Selatan, Bogor', 'Bogor Tengah, Bogor', 'Babakan, Bogor Tengah, Bogor', 'Babakan Pasar, Bogor Tengah, Bogor (halaman belum tersedia)', 'Cibogor, Bogor Tengah, Bogor', 'Ciwaringin, Bogor Tengah, Bogor', 'Gudang, Bogor Tengah, Bogor', 'Kebon Kelapa, Bogor Tengah, Bogor (halaman belum tersedia)', 'Pabaton, Bogor Tengah, Bogor', 'Paledang, Bogor Tengah, Bogor', 'Panaragan, Bogor Tengah, Bogor', 'Sempur, Bogor Tengah, Bogor', 'Tegal Lega, Bogor Tengah, Bogor (halaman belum tersedia)', 'Bogor Timur, Bogor', 'Baranangsiang, Bogor Timur, Bogor', 'Katulampa, Bogor Timur, Bogor', 'Sindangnasa, Bogor Timur, Bogor', 'Sindangsari, Bogor Timur, Bogor', 'Sukasari, Bogor Timur, Bogor', 'Tajur, Bogor Timur, Bogor', 'Bogor Utara, Bogor', 'Bantar Jati, Bogor Utara, Bogor (halaman belum tersedia)', 'Cibuluh, Bogor Utara, Bogor', 'Ciluar, Bogor Utara, Bogor', 'Cimahpar, Bogor Utara, Bogor', 'Ciparigi, Bogor Utara, Bogor', 'Kedung Halang, Bogor Utara, Bogor (halaman belum tersedia)', 'Tanah Baru, Bogor Utara, Bogor (halaman belum tersedia)', 'Tegal Gundil, Bogor Utara, Bogor (halaman belum tersedia)', 'Tanah Sareal, Bogor', 'Cibadak, Tanah Sareal, Bogor', 'Kayu Manis, Tanah Sareal, Bogor (halaman belum tersedia)', 'Kebon Pedes, Tanah Sareal, Bogor (halaman belum tersedia)', 'Kedung Badak, Tanah Sareal, Bogor (halaman belum tersedia)', 'Kedung Jaya, Tanah Sareal, Bogor (halaman belum tersedia)', 'Kedung Waringin, Tanah Sareal, Bogor (halaman belum tersedia)', 'Kencana, Tanah Sareal, Bogor', 'Mekar Wangi, Tanah Sareal, Bogor (halaman belum tersedia)', 'Sukadama, Tanah Sareal, Bogor', 'Sukaresmi, Tanah Sareal, Bogor', 'Tanah Sareal, Tanah Sareal, Bogor (halaman belum tersedia)']
```

```
In [11]: #import table to data frame
import pandas as pd
df = pd.DataFrame()
df['Subdistric'] = Subdistric
print(df)
```

Subdistric

```
In [16]: print(df_rep)
```

	Village	Subdistrics	City
0	Bogor Barat	Bogor	None
1	Balungbang Jaya	Bogor Barat	Bogor (halaman belum tersedia)
2	Bubulak	Bogor Barat	Bogor
3	Cilendek Barat	Bogor Barat	Bogor
4	Cilendek Timur	Bogor Barat	Bogor
..
69	Kencana	Tanah Sareal	Bogor
70	Mekar Wangi	Tanah Sareal	Bogor (halaman belum tersedia)
71	Sukadama	Tanah Sareal	Bogor
72	Sukaresmi	Tanah Sareal	Bogor
73	Tanah Sareal	Tanah Sareal	Bogor (halaman belum tersedia)

[74 rows x 3 columns]

```
In [17]: df_none = df_rep.drop(0)
```

```
In [18]: #save to CSV
df_none.to_csv(r"C:\Users\BIRawan\Downloads\export_data\location_city.csv", index = False, header=True)
```

```
In [19]: dataset = pd.read_csv(r"C:\Users\BIRawan\Downloads\export_data\location_city.csv")
```

```
In [20]: print(dataset)
```

	Village	Subdistrics	City
0	Balungbang Jaya	Bogor Barat	Bogor (halaman belum tersedia)
1	Bubulak	Bogor Barat	Bogor
2	Cilendek Barat	Bogor Barat	Bogor
3	Cilendek Timur	Bogor Barat	Bogor
4	Curug	Bogor Barat	Bogor
..
68	Kencana	Tanah Sareal	Bogor
69	Mekar Wangi	Tanah Sareal	Bogor (halaman belum tersedia)
70	Sukadama	Tanah Sareal	Bogor
71	Sukaresmi	Tanah Sareal	Bogor
72	Tanah Sareal	Tanah Sareal	Bogor (halaman belum tersedia)

[73 rows x 3 columns]