Visualize Your Population and Density of Surabaya based on Districts with Folium

Muhammad Sifa'ul Rizky

Lead of Data Science Instructor

Make.ai (PT. Renom Infrastruktur Indonesia)

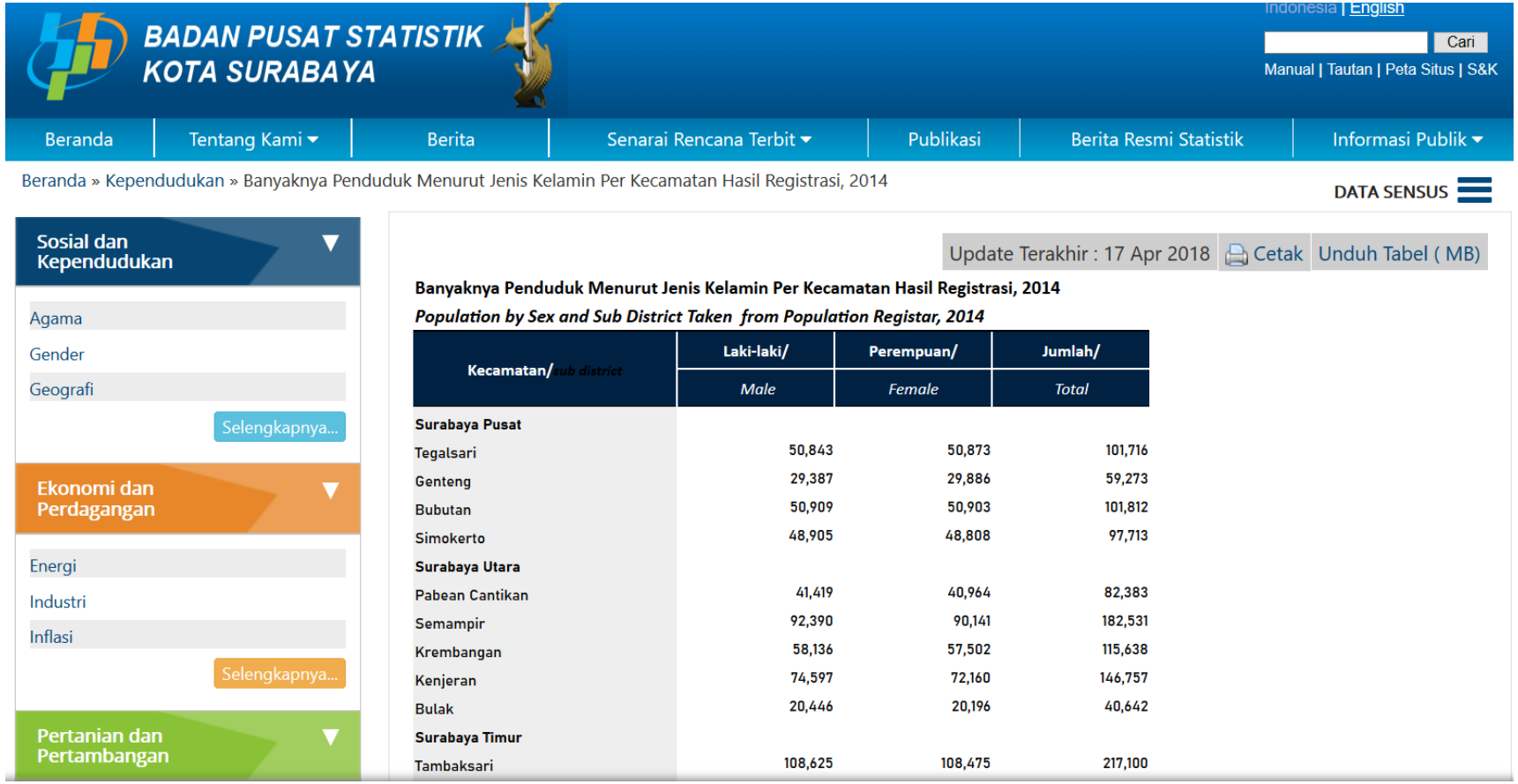
Muhammad Sifa'ul Rizky

rizkysifaul

msifaulkiki@gmail.com

Problem

How to visualize into more insightful from just a table:



BADAN PUSAT STATISTIK
KOTA SURABAYA

Indonesia | English

Cari

Manual | Tautan | Peta Situs | S&K

Beranda | Tentang Kami | Berita | Senarai Rencana Terbit | Publikasi | Berita Resmi Statistik | Informasi Publik

Beranda » Kependudukan » Banyaknya Penduduk Menurut Jenis Kelamin Per Kecamatan Hasil Registrasi, 2014

DATA SENSUS

Sosial dan Kependudukan

- Agama
- Gender
- Geografi

Selengkapnya...

Ekonomi dan Perdagangan

- Energi
- Industri
- Inflasi

Selengkapnya...

Pertanian dan Pertambangan

Update Terakhir : 17 Apr 2018 | Cetak | Unduh Tabel (MB)

Banyaknya Penduduk Menurut Jenis Kelamin Per Kecamatan Hasil Registrasi, 2014

Population by Sex and Sub District Taken from Population Registar, 2014

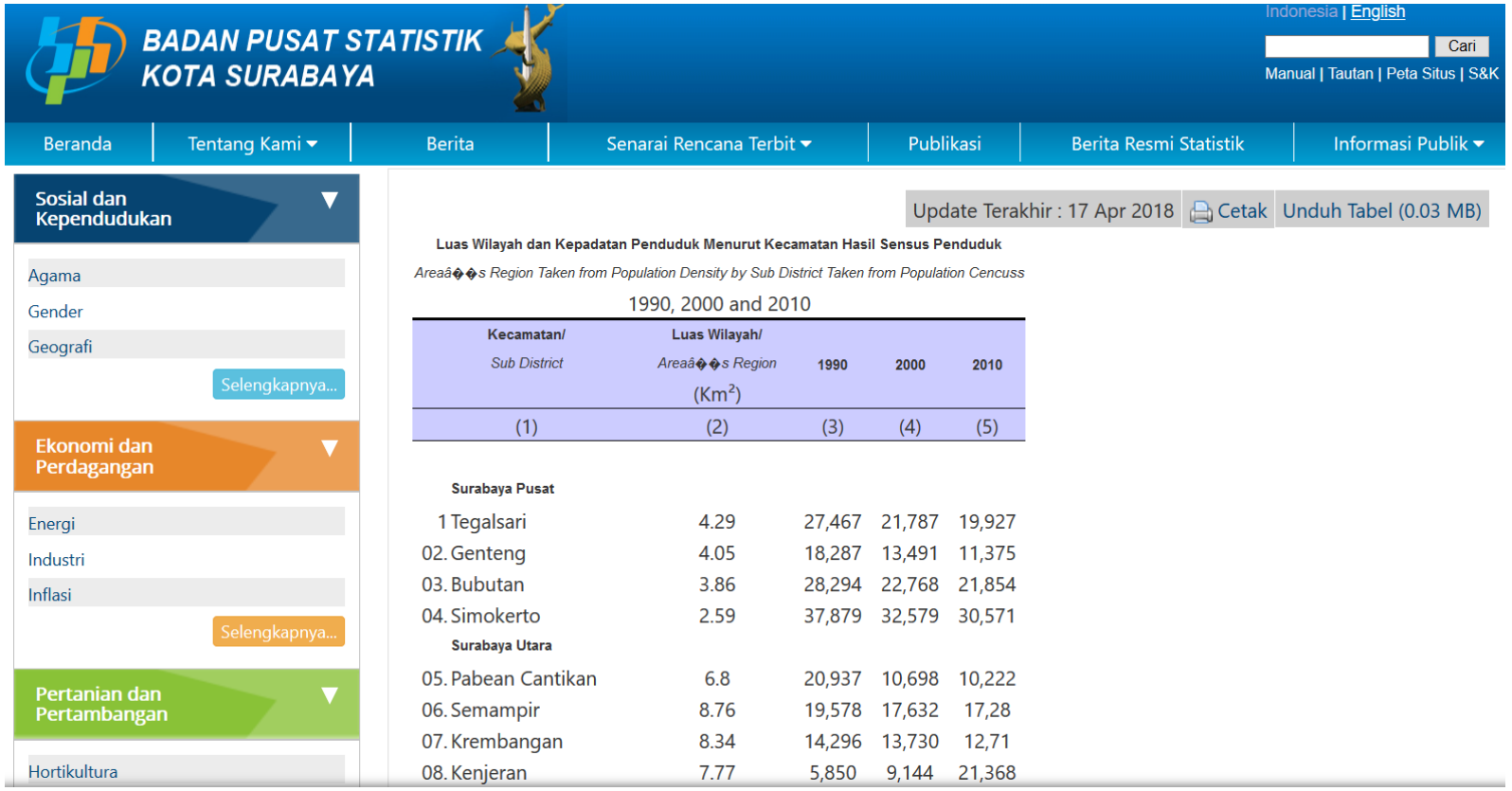
Kecamatan/*sub district*	Laki-laki/ *Male*	Perempuan/ *Female*	Jumlah/ *Total*
Surabaya Pusat			
Tegalsari	50,843	50,873	101,716
Genteng	29,387	29,886	59,273
Bubutan	50,909	50,903	101,812
Simokerto	48,905	48,808	97,713
Surabaya Utara			
Pabean Cantikan	41,419	40,964	82,383
Semampir	92,390	90,141	182,531
Krembangan	58,136	57,502	115,638
Kenjeran	74,597	72,160	146,757
Bulak	20,446	20,196	40,642
Surabaya Timur			
Tambaksari	108,625	108,475	217,100

Source: [BPS Kota Surabaya]

Solution

Gather the Data

- Scraping from BPS Surabaya
- Data about Population and Density of Surabaya



Source: [BPS Kota Surabaya]

Additional Data We Needed

- GeoJson Surabaya based on Districts
- Thanks for [OpenStreetMap Indonesia]


```
{"type":"FeatureCollection",
"features":[{"type":"Feature",
"properties":{"fid":1,"@id":"relation/8224396","admin_level":"6",
"name":"Genteng","type":"boundary","boundary":"administrative",
"is_in:city":"Surabaya",
"is_in:province":"Jawa Timur","source":"HOT_InAWARESurvey_2016"},
"geometry":{"type":"Polygon",
"coordinates":[[[112.747353,-7.2445179],[112.7473704,-
7.2451231],[112.7474579,-7.2457861],[112.7474858,-
7.2459187],[112.7475716,-7.2464083],[112.7475528,-
7.2467116],[112.7474107,-7.2470708],[112.7472631,-
7.2474087],[112.7471847,-7.2476024]
```

Cleansing the Data

In [19]:
```
data
```

Out[19]:

	District	Male	Female	Total
0	Tegalsari	50,843	50,873	101,716
1	Genteng	29,387	29,886	59,273
2	Bubutan	50,909	50,903	101,812
3	Simokerto	48,905	48,808	97,713
4	Pabean Cantikan	41,419	40,964	82,383

Cleansing the Data

```
data_total.head()
```

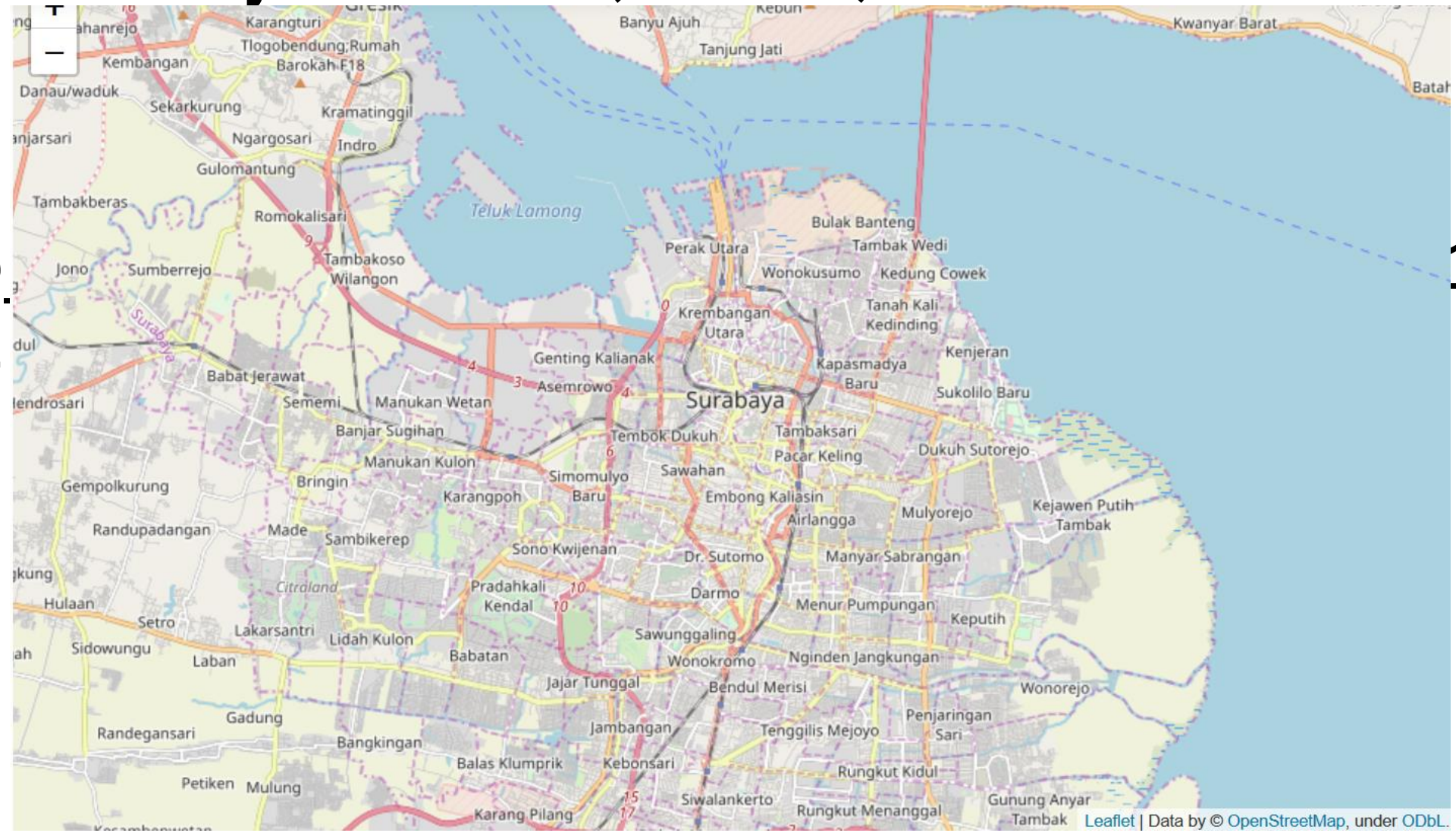
	District	Areas Region(km squared)	Borough	Latitude	Longitude	Male Population	Female Population	Total Population
0	TEGALSARI	4.29	Surabaya Pusat	-7.279848	112.736069	50843	50873	101716
1	GENTENG	4.05	Surabaya Pusat	-7.259088	112.747986	29387	29886	59273
2	BUBUTAN	3.86	Surabaya Pusat	-7.249960	112.730110	50909	50903	101812
3	SIMOKERTO	2.59	Surabaya Pusat	-7.238650	112.753940	48905	48808	97713
4	PABEAN CANTIKAN	6.80	Surabaya Utara	-7.214750	112.730110	41419	40964	82383

Visualize your Data (Folium)

```
map_sby = folium.Map(location=[-7.2459717,
112.7378266], zoom_start=12)
```

Visualize your Data (Folium)

```
map_                                                    17,
112
```



Visualize your Data (Folium)

```
for lat, lng, borough, neighborhood in zip(data_all['Latitude'],
data_all['Longitude'], data_all['Borough'], data_all['District']):
    label = '{}, {}'.format(neighborhood, borough)
    label = folium.Popup(label, parse_html=True)
    folium.CircleMarker(
        [lat, lng],
        radius=5,
        popup=label,
        color='green',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(map_sby)
```

V

for

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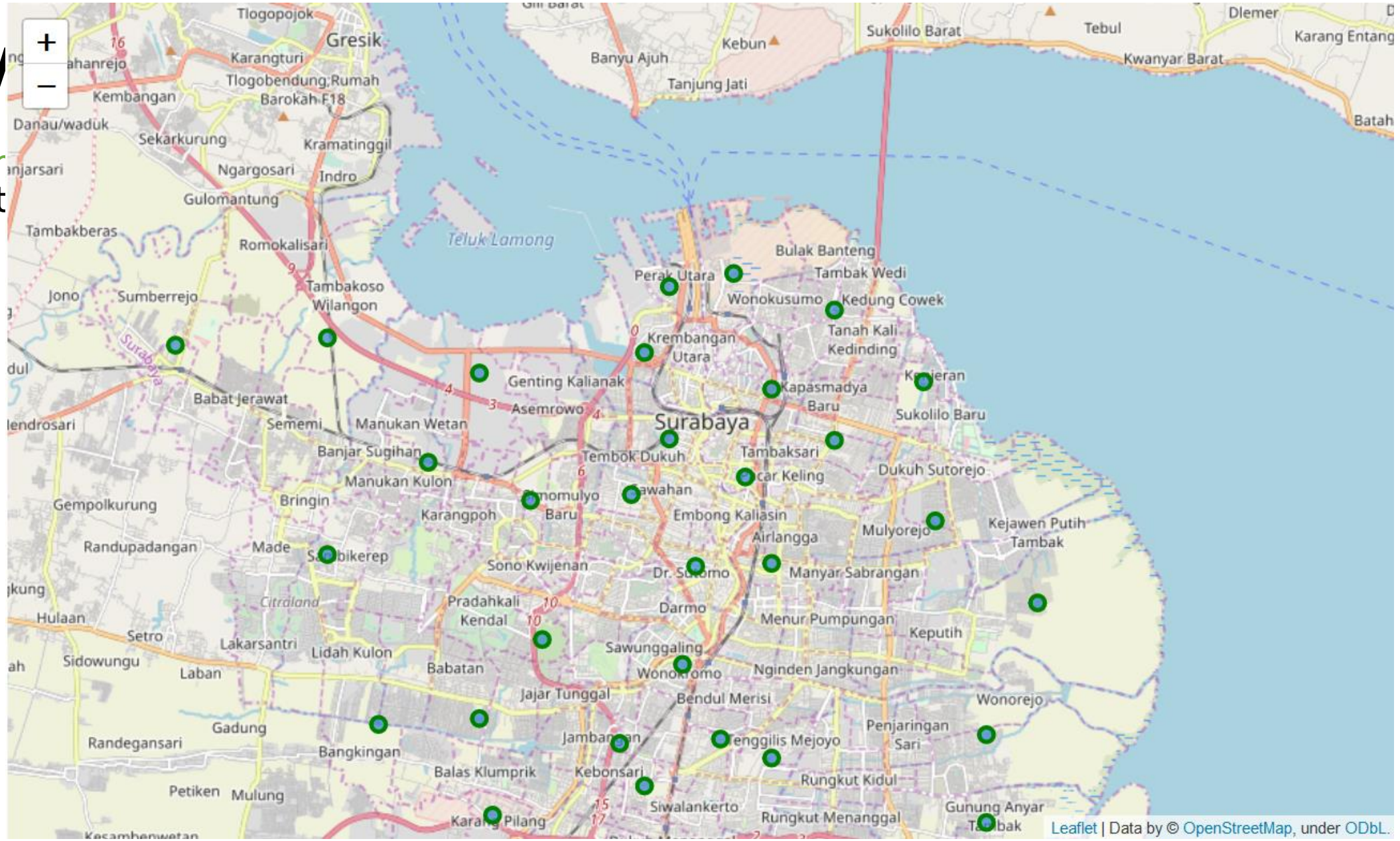
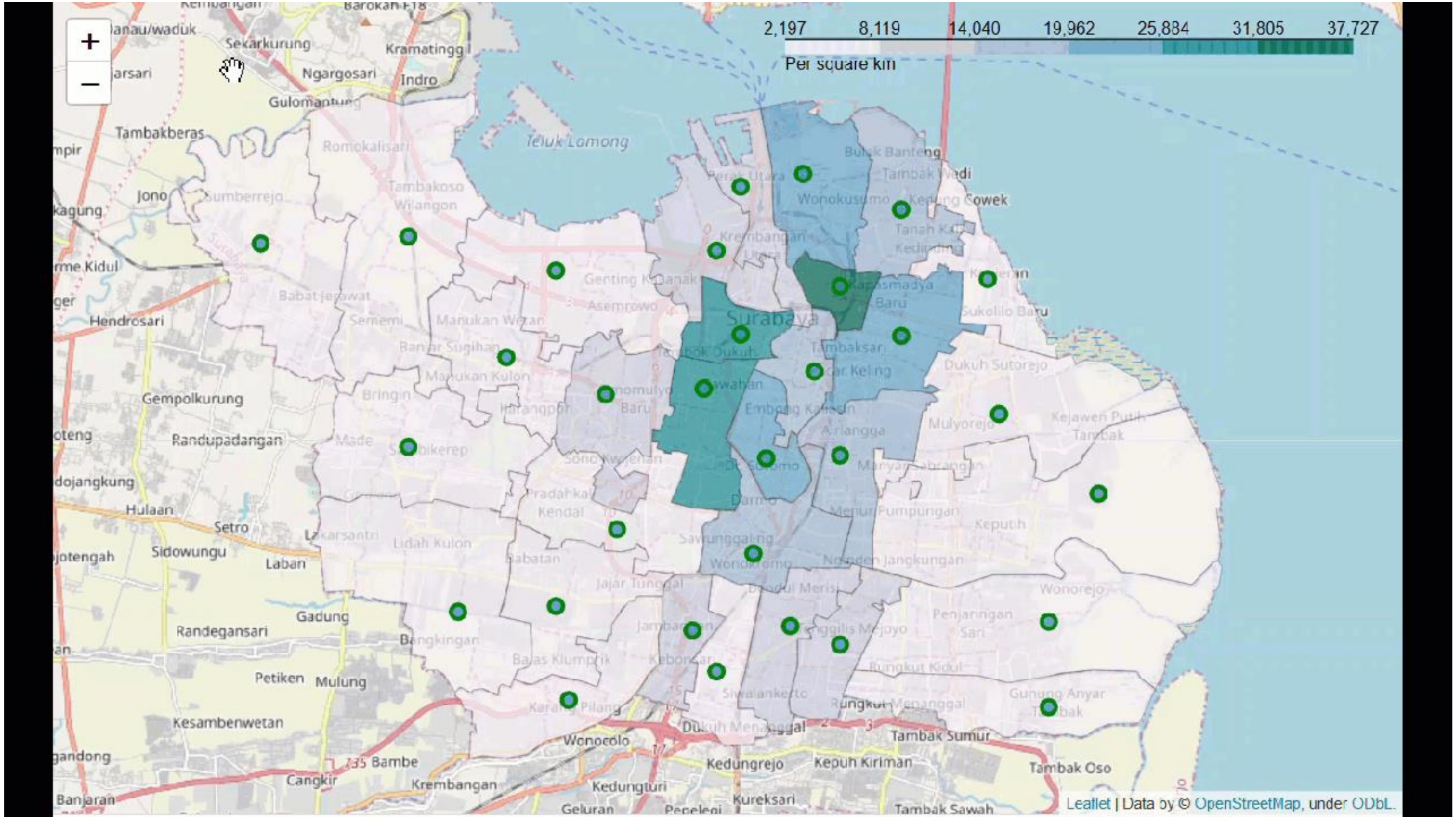

Tlogopojok
Gresik
Karangturi
Tlogobendung
Rumah Barokah F18
Kembangan
Danau/waduk
Sekarkurung
Kramatinggil
Ngargosari
Indro
Gulomantung
Tambakberas
Romokalisari
Tambakoso Wilangon
Jono
Sumberrejo
Surabaya
Babat Jerawat
Sememi
Manukan Wetan
Banjar Sugihan
Manukan Kulon
Bringin
Gempolkurung
Randupadangan
Made
Citraland
Hulaan
Setro
Lakarsantri
Lidah Kulon
Sidowungu
Laban
Babatan
Gadung
Randegansari
Bangkingan
Petiken
Mulung
Balas Klumprik
Karang Pilang
Jajar Tunggal
Pradahkali Kendal
Sono Kwijenan
Karangpoh
Genting Kalianak
Asemrowo
Teluk Lamong
Banyu Ajuh
Kebun
Tanjung Jati
Sukolilo Barat
Tebul
Dlemer
Karang Entang
Kwanyar Barat
Batah
Bulak Banteng
Perak Utara
Tambak Wedi
Wonokusumo
Kedung Cowek
Tanah Kali Kedinding
Krembangan Utara
Kapasmadya Baru
Sukolilo Baru
Surabaya
Tembok Dukuh
Tambaksari
Dukuh Sutorejo
Embong Kaliasin
Airlangga
Mulyorejo
Kejawen Putih Tambak
Manyar Sabrangan
Darmo
Menur Pumpungan
Keputih
Sawunggaling
Wonokromo
Nginden Jangkungan
Bendul Merisi
Wonorejo
Penjaringan Sari
Tenggilis Mejoyo
Kebonsari
Rungkut Kidul
Siwalankerto
Rungkut Menanggal
Gunung Anyar
Leaflet | Data by © OpenStreetMap, under ODbL.

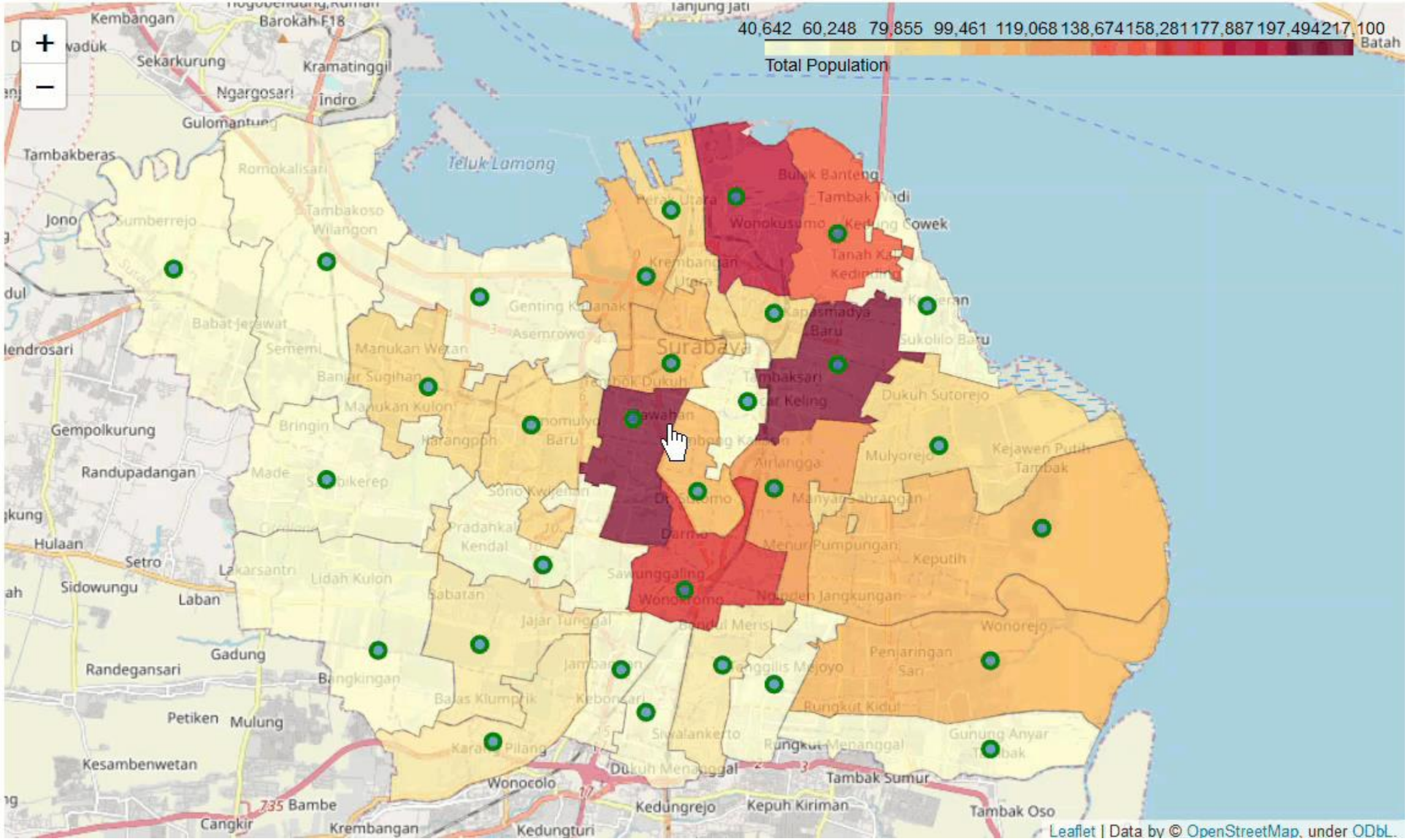
Visualize your Data (Folium) Adding this function

```
folium.Choropleth(
    geo_data = data_keca,
    data = data_all,
    columns=['District','Per square km'],
    key_on='feature.properties.name’,
    fill_color='PuBuGn',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name='Per square km',
    reset=True).add_to(map_sby)
```


2,197
8,119
14,040
19,962
25,884
31,805
37,727
Per square km
Teluk Lamong
Surabaya
Tambakberas
Jono
Hendrosari
Gempolkurung
Randupadangan
Hulaan
Setro
Sidowungu
Laban
Gadung
Randegansari
Petiken
Mulung
Kesamberwetan
Bambe
Cangkir
Krembangan
Banjaran
Wonocolo
Kedungrejo
Kepuh Kiriman
Tambak Sumur
Tambak Oso
Kedungturi
Kureksari
Tambak Sawah
Wonokusumo
Dukuh Sutorejo
Mulyorejo
Kejawen Putih Tambak
Keputih
Wonorejo
Penjaringan Sari
Gunung Anyar
Leaflet | Data by © OpenStreetMap, under ODbL.

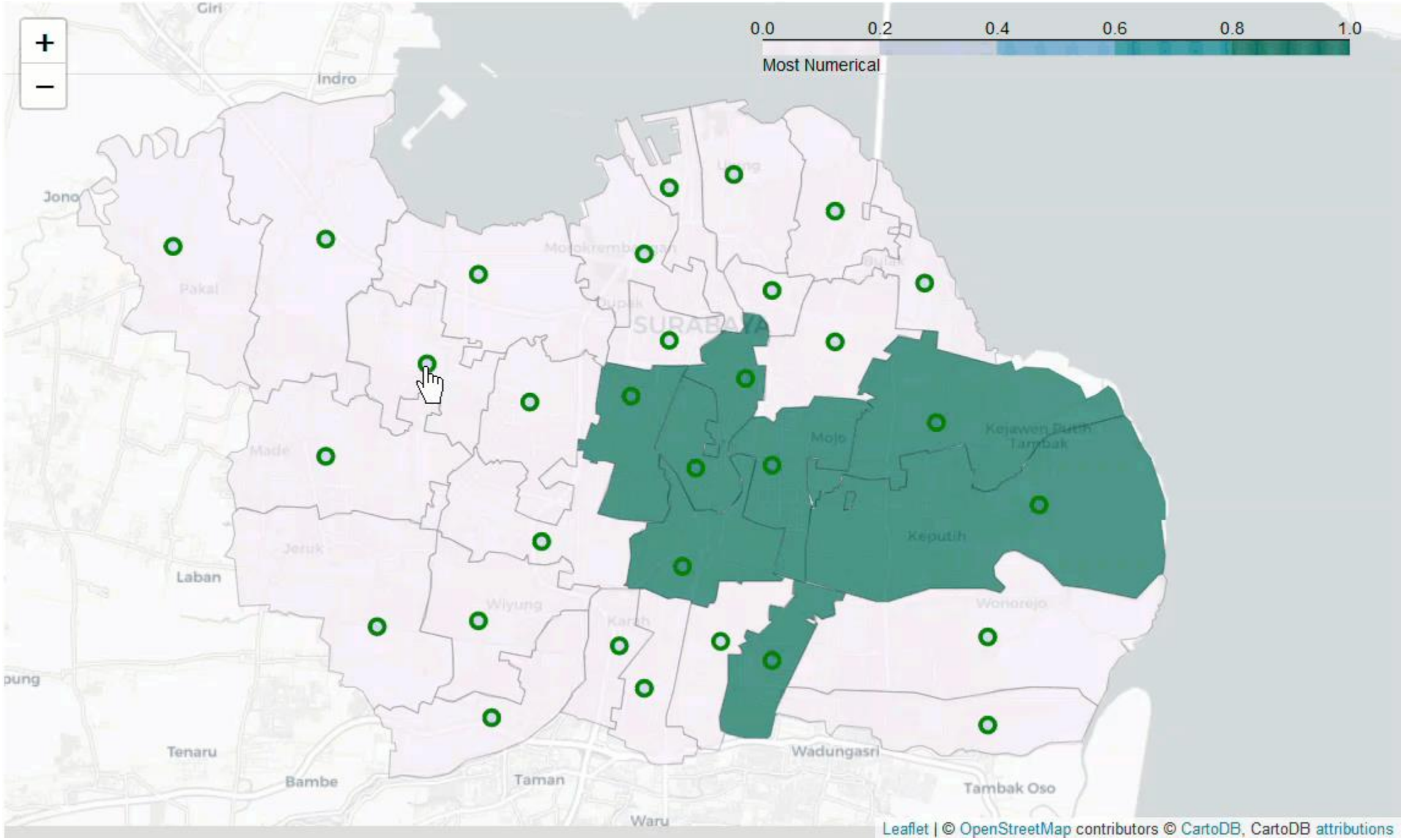
Visualize your Data (Folium) Total Population

```
folium.Choropleth(
    geo_data = data_keca,
    data = data_all,
    columns=['District’,’Total Population'],
    key_on='feature.properties.name’,
    fill_color='YlOrRd',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name='Per square km',
    reset=True).add_to(map_sby)
```


40,642 60,248 79,855 99,461 119,068 138,674 158,281 177,887 197,494 217,100
Total Population
Teluk Lamong
Surabaya
Kembangan
Barokah F18
Sekarkurung
Kramatinggil
Ngargosari
Indro
Gulomantung
Tambakberas
Jono
Tambakoso Wilangon
Genting Kalianak
Asemrowo
Manukan Wetan
Sememi
Manukan Kulon
Bringin
Harangpoh
Gempolkurung
Randupadangan
Hulaan
Setro
Sidowungu
Laban
Gadung
Randegansari
Bangkingan
Petiken
Mulung
Kesambenwetan
Cangkir
Krembangan
Kedungturi
Wonocolo
Kedungrejo
Kepuh Kiriman
Tambak Sumur
Tambak Oso
Wonokusumo
Tambak Wedi
Kapasmadya Baru
Dukuh Sutorejo
Mulyorejo
Kejawen Putih Tambak
Airlangga
Menur Pumpungan
Keputih
Wonorejo
Penjaringan Sari
Rungkut Kidul
Gunung Anyar
Pradahkalan
Kendal
Lidah Kulon
Sawunggaling
Wonokromo
Jajar Tunggal
Sidotopo
Darmo
Sukolilo Baru
Leaflet | Data by © OpenStreetMap, under ODbL.

Visualize your Data (Folium) Male vs Female

```
folium.Choropleth(
    geo_data = data_keca,
    data = data_all,
    columns=['District’,’Most Numerical'],
    key_on='feature.properties.name’,
    fill_color=‘PuBuGn',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name=‘Most Numerical',
    reset=True).add_to(map_sby)
```


0.0
0.2
0.4
0.6
0.8
1.0
Most Numerical
Giri
Indro
Jono
Pakal
Made
Jeruk
Laban
Wiyung
Karah
Tenaru
Bambe
Taman
Waru
Wadungasri
Tambak Oso
Mojo
Keputih
Wonorejo
Leaflet | © OpenStreetMap contributors © CartoDB, CartoDB attributions

Muhammad Sifa'ul Rizky
rizkysifaul
msifaulkiki@gmail.com

Terima kasih!

PS. All code are in my GitHub, you can check it and hands-on.