

# Covid-19 mapa Epidemiólogo

September 3, 2020

```
[22]: import pandas as pd
import numpy as np
import folium
from folium import plugins
```

```
[23]: #localização corresponde a latitude e longitude do Brasil
mapa = folium.Map(
    width = "100%",
    height = "100%",
    location = [-15.77972, -47.92972],
    zoom_start = 4
)
```

```
[24]: mapa
```

```
[24]: <folium.folium.Map at 0x7f09bcc9bbe0>
```

```
[25]: mapa.save('covid-19.html')
```

```
[26]: #Origem do arquivo csv https://brasil.io/dataset/covid19/caso?format=csv
df = pd.read_csv("caso_covid.csv")
```

```
[27]: df
```

```
[27]:
```

	date	state	city	place_type	confirmed	deaths	order_for_place	\
0	2020-09-02	AP	NaN	state	43800	668	166	
1	2020-09-01	AP	NaN	state	43514	663	165	
2	2020-08-31	AP	NaN	state	43193	661	164	
3	2020-08-30	AP	NaN	state	42892	660	163	
4	2020-08-29	AP	NaN	state	42771	659	162	
...	...	...	...	...	...	...	...	
618808	2020-06-23	SP	Óleo	city	1	0	5	
618809	2020-06-22	SP	Óleo	city	1	0	4	
618810	2020-06-21	SP	Óleo	city	1	0	3	
618811	2020-06-20	SP	Óleo	city	1	0	2	
618812	2020-06-19	SP	Óleo	city	1	0	1	

	is_last	estimated_population_2019	city_ibge_code \
0	True	845731.0	16.0
1	False	845731.0	16.0
2	False	845731.0	16.0
3	False	845731.0	16.0
4	False	845731.0	16.0
...	...	...	...
618808	False	2496.0	3533809.0
618809	False	2496.0	3533809.0
618810	False	2496.0	3533809.0
618811	False	2496.0	3533809.0
618812	False	2496.0	3533809.0

	confirmed_per_100k_inhabitants	death_rate
0	5178.95170	0.0153
1	5145.13480	0.0152
2	5107.17947	0.0153
3	5071.58896	0.0154
4	5057.28181	0.0154
...	...	...
618808	40.06410	0.0000
618809	40.06410	0.0000
618810	40.06410	0.0000
618811	40.06410	0.0000
618812	40.06410	0.0000

[618813 rows x 12 columns]

```
[28]: estados = df.loc[df.place_type == 'state', ['state', 'confirmed', 'deaths', 'is_last']]
```

```
[29]: estados.head()
```

```
[29]:
```

	state	confirmed	deaths	is_last
0	AP	43800	668	True
1	AP	43514	663	False
2	AP	43193	661	False
3	AP	42892	660	False
4	AP	42771	659	False

```
[30]: #Somatorio de dados vazios
estados.isnull().sum()
```

```
[30]: state      0
confirmed    0
deaths       0
is_last      0
```

dtype: int64

```
[31]: #Se houvessem dados vazios:  
estados.loc[estados.deaths.isnull(), 'deaths'] = 0
```

```
[32]: ultimas = estados.loc[estados.is_last == True, ['state', 'confirmed', 'deaths']]
```

```
[33]: #Escala logaritma  
ultimas['log_confirmed'] = np.log(ultimas['confirmed']+1)  
ultimas['log_deaths'] = np.log(ultimas['deaths']+1)
```

```
[34]: len(ultimas)
```

```
[34]: 27
```

```
[35]: ultimas.head()
```

```
[35]:
```

	state	confirmed	deaths	log_confirmed	log_deaths
0	AP	43800	668	10.687412	6.505784
2305	AC	25027	618	10.127750	6.428105
5190	AM	121793	3798	11.710086	8.242493
13764	AL	79550	1902	11.284154	7.551187
26494	DF	164649	2609	12.011577	7.867106

```
[36]: import json  
br_estados = "br_states.json"  
geo_json_data = json.load(open(br_estados))
```

```
[37]: #geo_json_data
```

```
[38]: mapa.choropleth(  
    geo_data = geo_json_data,  
    name = "CASOS",  
    data = ultimas,  
    columns = ['state', 'log_confirmed'],  
    key_on = 'feature.id',  
    fill_color = "Reds",  
    fill_opacity = 0.8,  
    line_color = 'white',  
    line_opacity = 0.8,  
    show = True,  
    legend_name = "Log de casos de Covid-19 no Brasil"  
)
```

/home/usuario/anaconda3/lib/python3.8/site-packages/folium/folium.py:411:  
FutureWarning: The choropleth method has been deprecated. Instead use the new  
Choropleth class, which has the same arguments. See the example notebook

'GeoJSON\_and\_choropleth' for how to do this.  
warnings.warn(

```
[39]: mapa.choropleth(  
    geo_data = geo_json_data,  
    name = "MORTES",  
    data = ultimas,  
    columns = ['state', 'log_deaths'],  
    key_on = 'feature.id',  
    fill_color = "PuBuGn",  
    fill_opacity = 0.8,  
    line_color = 'white',  
    line_opacity = 0.8,  
    show = False,  
    legend_name = "Log de mortes de Covid-19 no Brasil"  
)
```

```
[40]: folium.LayerControl().add_to(mapa)
```

```
[40]: <folium.map.LayerControl at 0x7f09c39ac1c0>
```

```
[41]: mapa.save('covid-19.html')
```

```
[42]: #from folium.plugins import FloatImage
```

```
[43]: mapa
```

```
[43]: <folium.folium.Map at 0x7f09bcc9bbe0>
```

```
[ ]:
```