1.2-exploratory_analysis_socioeconomic

October 20, 2020

1 Imports

[1]:
```
import sys
import os

import matplotlib as mpl
```

[2]:
```
project_path = os.path.abspath(os.path.join('..'))

if project_path not in sys.path:
    sys.path.append(f'{project_path}/src/visualizations/')

from covid_data_viz import CovidDataViz
```

2 Setup

[3]:
```
mpl.rcParams['figure.figsize'] = (9, 5)
```

3 Goal

My goal is to visualize various aspect of the `COVID-19` pandemic.

4 Data sources

In this notebook I use data from the following sources: - https://github.com/CSSEGISandData/COVID-19 - JHU CSSE COVID-19 Data. - GDP per capita PPP - The World Bank. - Population - The World Bank. - Rural population - The World Bank. - Life expectancy at birth - The World Bank. - Current healthcare expenditure - The World Bank. - https://datahub.io/JohnSnowLabs/country-and-continent-codes-list - country codes and continents.

5 Data loading

[4]:
```
cdv = CovidDataViz()
```

`Yemen` is an outlier and is excluded from the analysis.

6 Socioeconomic data.

To enhance the analysis I used data avaible freely at from the `World Bank`. In this part of the analysis I use the last available value for each country. This is a reasonble thing to do given that these specific do not undergo wild fluctuations from year to year.

7 Correlation matrix

Note that `Rural population %` and `Cases per mln` have a correlation of `-0.46%`. Possible reasons could be the virus has a harder time spreading in scarcely populated countries. Note also that `GDP Healthcare` and `Dead per mln` have a positive correlation of `0.38`. This could be considered an expected result given that excluding `Asia` most of the countries around the world do not have experience in dealing with such matters.

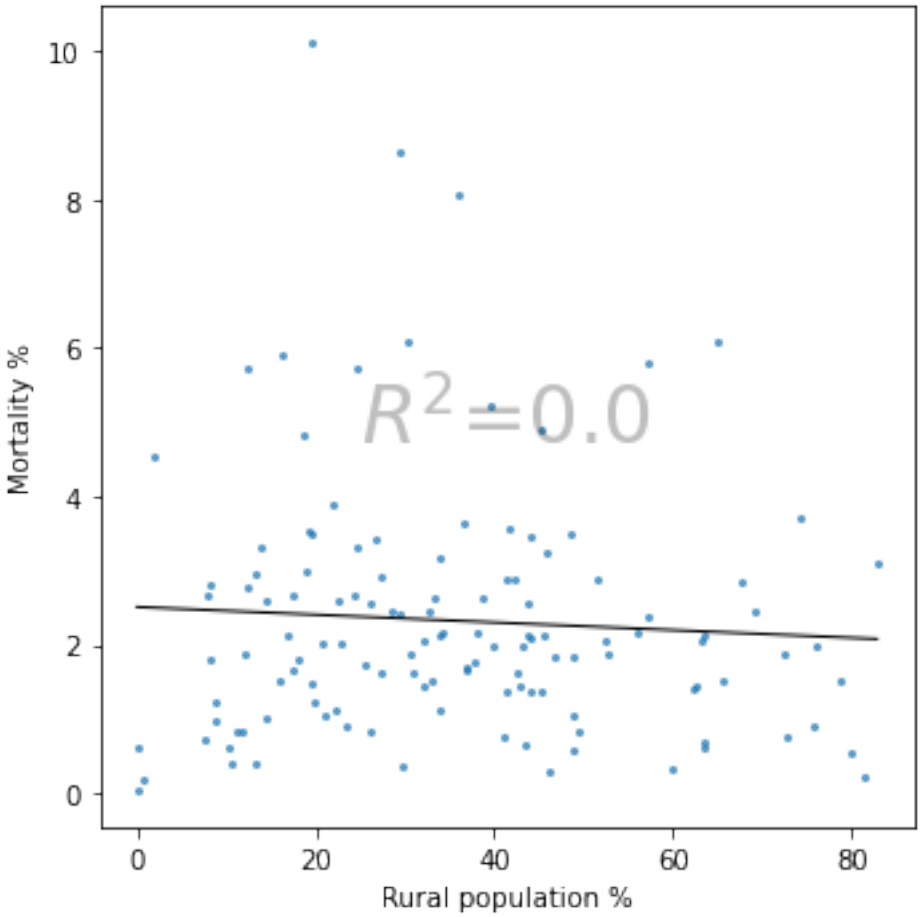
[5]:
```
cdv.show_corr_mat()
```

```
<pandas.io.formats.style.Styler at 0x7f545e69d8e0>
```

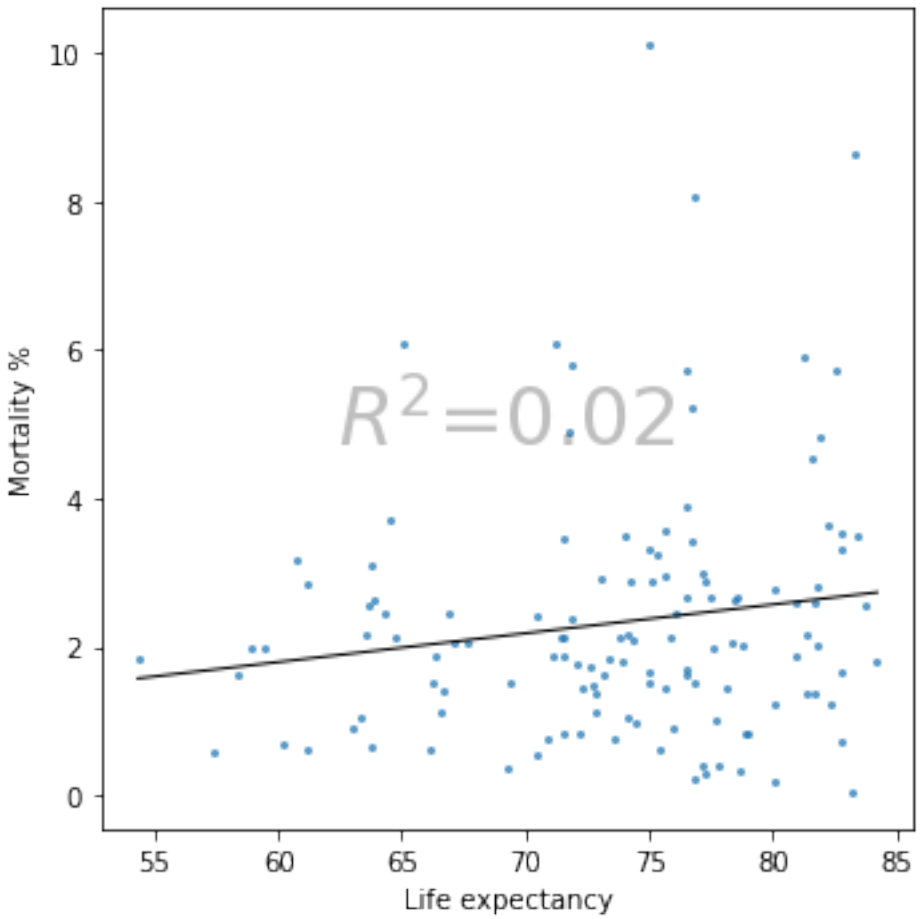
8 Mortality

As a reminder note that `mortality = dead / confirmed`. Observe that the `Life expectancy` vs. `Mortality %` scatter plot has a few nasty outliers to right of the plot. One possible explanation is that people from the risk group are more prevalent in countries with higher `life expectancy`. In the scatter plots we do not find any nice linear relationships. Perhaps examining the data on a per continent level would yield more fruitfull results.

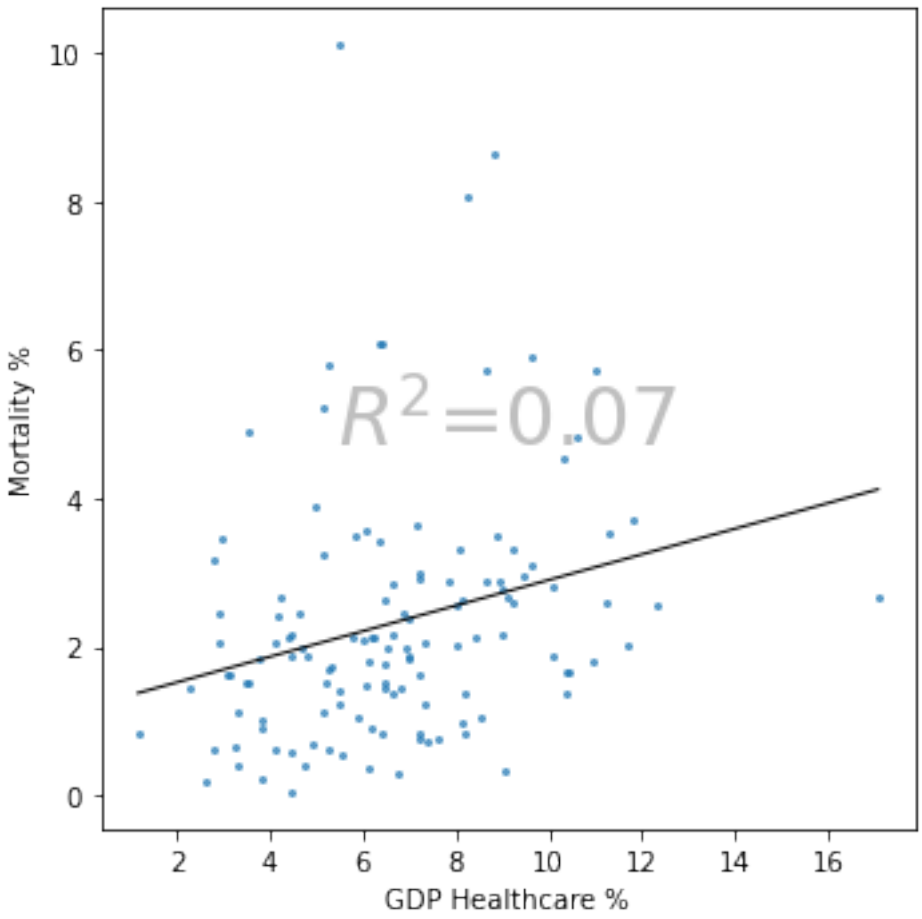
[6]:
```
cdv.plot_with_slope('Rural population %', 'Mortality %')
```



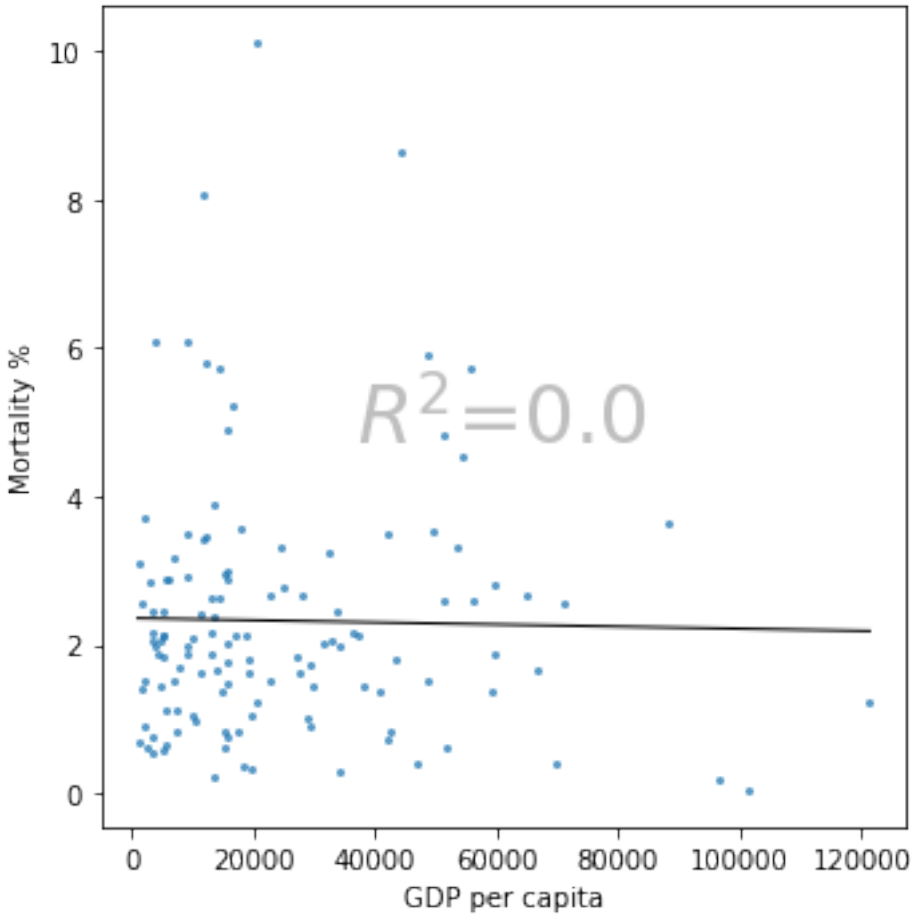
[7]:
```
cdv.plot_with_slope('Life expectancy', 'Mortality %')
```



[8]:
```
cdv.plot_with_slope('GDP Healthcare %', 'Mortality %')
```



[9]:
```
cdv.plot_with_slope('GDP per capita', 'Mortality %')
```


10
8
6
4
2
0
Mortality %
R^2=0.0
0
20000
40000
60000
80000
100000
120000
GDP per capita