Matplotlib 22_ Pandas Data Frame dan Matplotlib

June 10, 2022

1 Visualisasi Data yang tersimpan pada Pandas Data Frame

Dalam sesi ini kita akan mempelajari cara untuk melakukan visualisasi data yang tersimpan pada Pandas Data Frame dengan Matplotlib.

1.1 1. Import Modules

[1]:
```
%matplotlib inline
```

[2]:
```
import matplotlib
import matplotlib.pyplot as plt
import pandas as pd

print(matplotlib.__version__)
print(pd.__version__)
```

```
3.3.4
1.2.4
```

1.2 2. Sample Dataset

[3]:
```
df = pd.read_csv('./2020.csv')
df
```

[3]:
```
                Country name  Regional indicator  Ladder score  \
0                    Finland      Western Europe        7.8087
1                    Denmark      Western Europe        7.6456
2                Switzerland      Western Europe        7.5599
3                    Iceland      Western Europe        7.5045
4                     Norway      Western Europe        7.4880
..                       …                   …             …
148  Central African Republic  Sub-Saharan Africa        3.4759
149                   Rwanda  Sub-Saharan Africa        3.3123
150                 Zimbabwe  Sub-Saharan Africa        3.2992
151              South Sudan  Sub-Saharan Africa        2.8166
152              Afghanistan          South Asia        2.5669

     Standard error of ladder score  upperwhisker  lowerwhisker  \
0                          0.031156      7.869766      7.747634
1                          0.033492      7.711245      7.579955
2                          0.035014      7.628528      7.491272
3                          0.059616      7.621347      7.387653
4                          0.034837      7.556281      7.419719
..                              …           …           …
148                        0.115183      3.701658      3.250141
149                        0.052425      3.415053      3.209547
150                        0.058674      3.414202      3.184198
151                        0.107610      3.027516      2.605684
152                        0.031311      2.628270      2.505530

     Logged GDP per capita  Social support  Healthy life expectancy  \
0                10.639267        0.954330                71.900825
1                10.774001        0.955991                72.402504
2                10.979933        0.942847                74.102448
3                10.772559        0.974670                73.000000
4                11.087804        0.952487                73.200783
..                     …             …                      …
148               6.625160        0.319460                45.200001
149               7.600104        0.540835                61.098846
150               7.865712        0.763093                55.617260
151               7.425360        0.553707                51.000000
152               7.462861        0.470367                52.590000

     Freedom to make life choices  Generosity  Perceptions of corruption  \
0                        0.949172   -0.059482                   0.195445
1                        0.951444    0.066202                   0.168489
2                        0.921337    0.105911                   0.303728
3                        0.948892    0.246944                   0.711710
4                        0.955750    0.134533                   0.263218
..                            …         …                        …
148                      0.640881    0.082410                   0.891807
149                      0.900589    0.055484                   0.183541
150                      0.711458   -0.072064                   0.810237
151                      0.451314    0.016519                   0.763417
152                      0.396573   -0.096429                   0.933687

     Ladder score in Dystopia  Explained by: Log GDP per capita  \
0                    1.972317                          1.285190
1                    1.972317                          1.326949
2                    1.972317                          1.390774
3                    1.972317                          1.326502
4                    1.972317                          1.424207
..                        …                               …
148                  1.972317                          0.041072
149                  1.972317                          0.343243
```

```
150                  1.972317                          0.425564
151                  1.972317                          0.289083
152                  1.972317                          0.300706

     Explained by: Social support  Explained by: Healthy life expectancy  \
0                        1.499526                               0.961271
1                        1.503449                               0.979333
2                        1.472403                               1.040533
3                        1.547567                               1.000843
4                        1.495173                               1.008072
..                            …                                    …
148                      0.000000                               0.000000
149                      0.522876                               0.572383
150                      1.047835                               0.375038
151                      0.553279                               0.208809
152                      0.356434                               0.266052

     Explained by: Freedom to make life choices  Explained by: Generosity  \
0                                      0.662317                  0.159670
1                                      0.665040                  0.242793
2                                      0.628954                  0.269056
3                                      0.661981                  0.362330
4                                      0.670201                  0.287985
..                                          …                       …
148                                    0.292814                  0.253513
149                                    0.604088                  0.235705
150                                    0.377405                  0.151349
151                                    0.065609                  0.209935
152                                    0.000000                  0.135235

     Explained by: Perceptions of corruption  Dystopia + residual
0                                   0.477857             2.762835
1                                   0.495260             2.432741
2                                   0.407946             2.350267
3                                   0.144541             2.460688
4                                   0.434101             2.168266
..                                       …                  …
148                                 0.028265             2.860198
149                                 0.485542             0.548445
150                                 0.080929             0.841031
151                                 0.111157             1.378751
152                                 0.001226             1.507236

[153 rows x 20 columns]
```

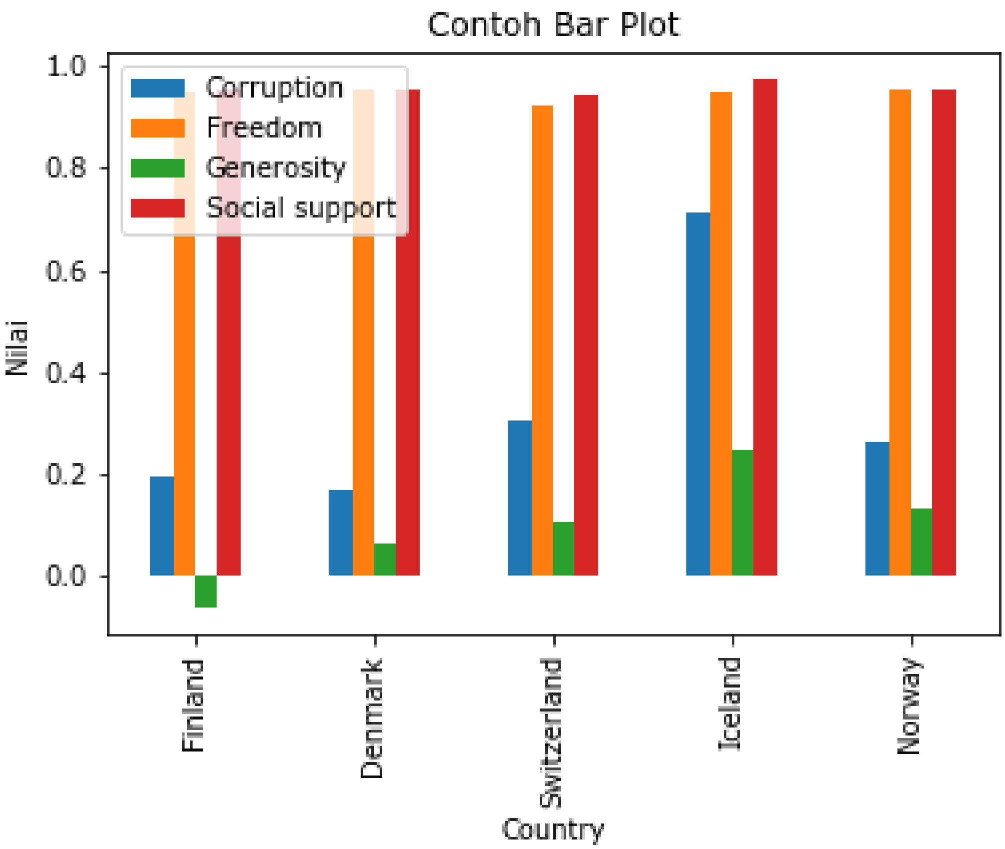
[4]:

```
df.rename(columns={
    'Country name': 'Country',
    'Perceptions of corruption': 'Corruption',
    'Freedom to make life choices': 'Freedom'
}, inplace=True)

df.columns
```

```
[4]: Index(['Country', 'Regional indicator', 'Ladder score',
            'Standard error of ladder score', 'upperwhisker', 'lowerwhisker',
            'Logged GDP per capita', 'Social support', 'Healthy life expectancy',
            'Freedom', 'Generosity', 'Corruption', 'Ladder score in Dystopia',
            'Explained by: Log GDP per capita', 'Explained by: Social support',
            'Explained by: Healthy life expectancy',
            'Explained by: Freedom to make life choices',
            'Explained by: Generosity', 'Explained by: Perceptions of corruption',
            'Dystopia + residual'],
           dtype='object')
```

1.3 2. Bar Plot

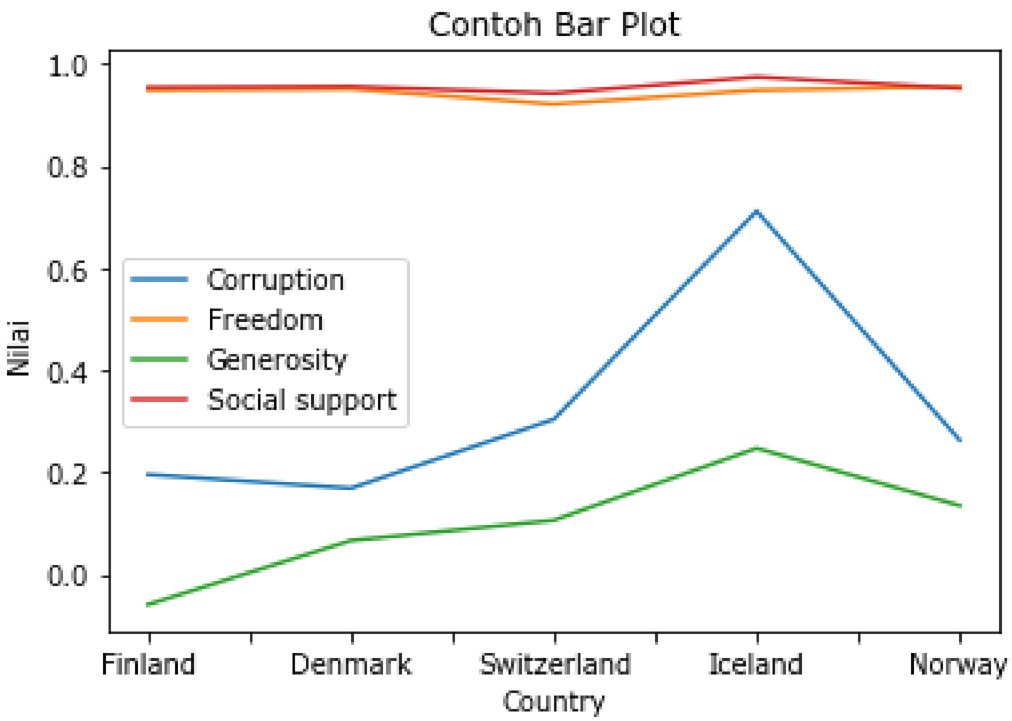
```
[5]: df[:5].plot(x='Country',
                 y=['Corruption', 'Freedom', 'Generosity', 'Social support'],
                 kind='bar')

     plt.title('Contoh Bar Plot')
     plt.ylabel('Nilai')

     plt.show()
```



1.4 3. Line Plot

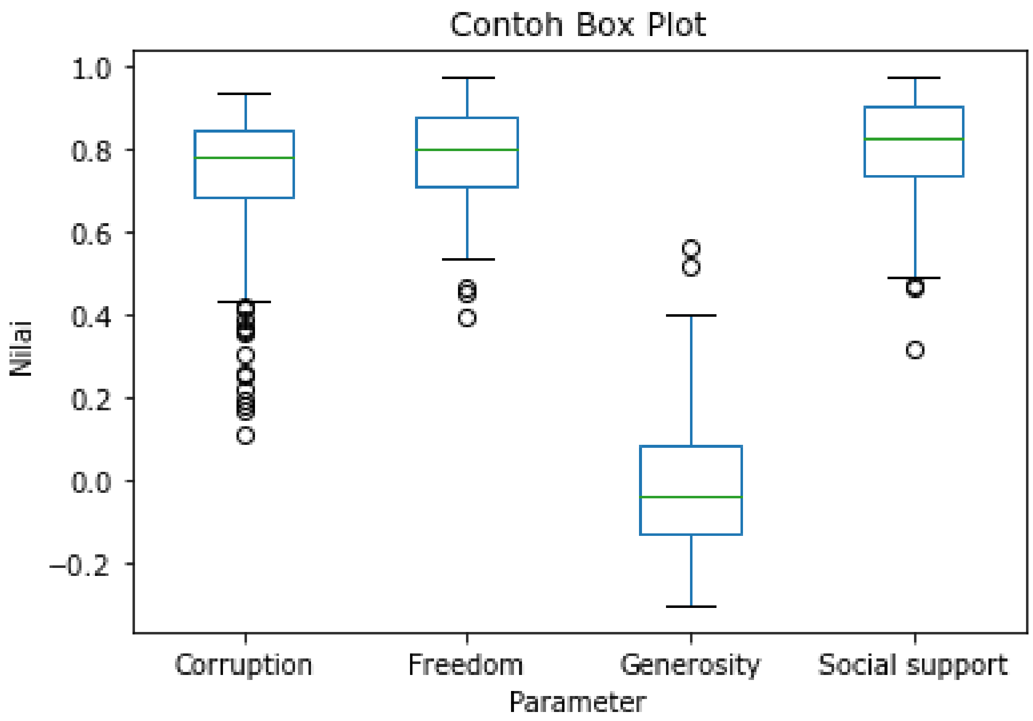
[6]:

```
df[:5].plot(x='Country',
            y=['Corruption', 'Freedom', 'Generosity', 'Social support'],
            kind='line')

plt.title('Contoh Bar Plot')
plt.ylabel('Nilai')

plt.show()
```



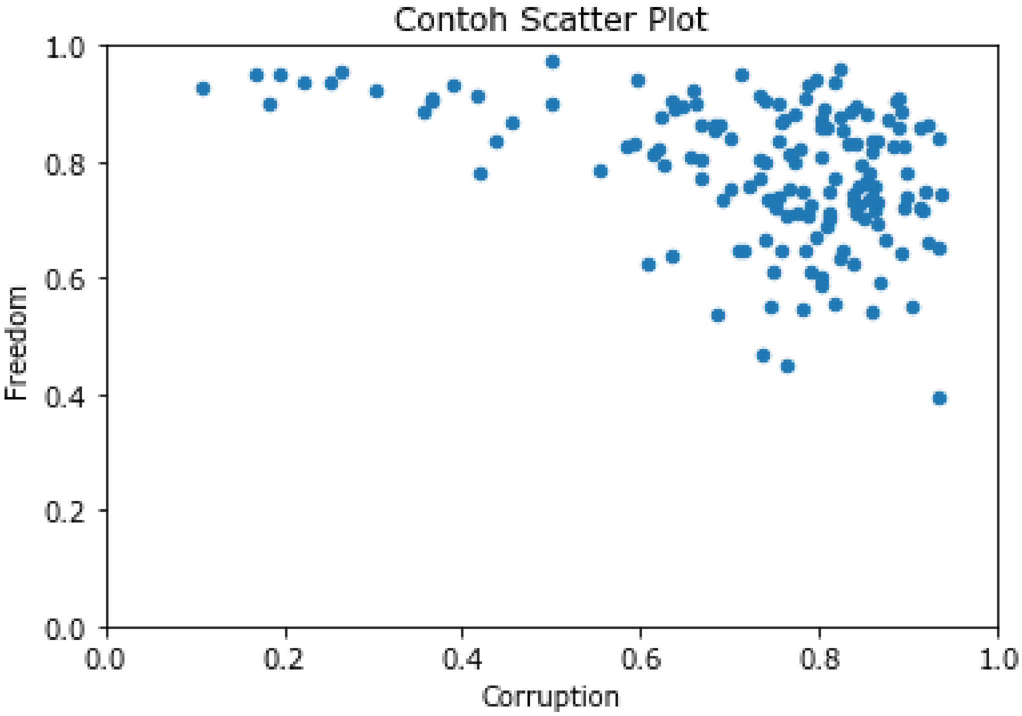
1.5 4. Box Plot

[7]:
```
df.plot(y=['Corruption', 'Freedom', 'Generosity', 'Social support'],
       kind='box')

plt.title('Contoh Box Plot')
plt.xlabel('Parameter')
plt.ylabel('Nilai')

plt.show()
```



1.6 5. Scatter Plot

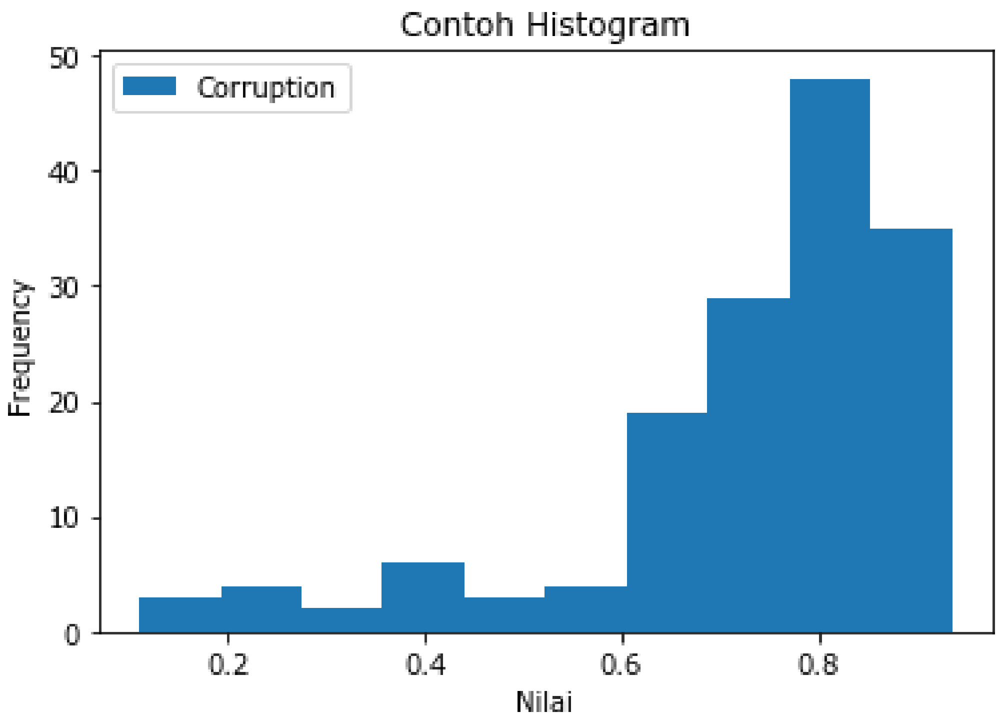
[8]:
```
df.plot(x='Corruption', y='Freedom', kind='scatter')

plt.xlim((0, 1))
plt.ylim((0, 1))

plt.title('Contoh Scatter Plot')

plt.show()
```



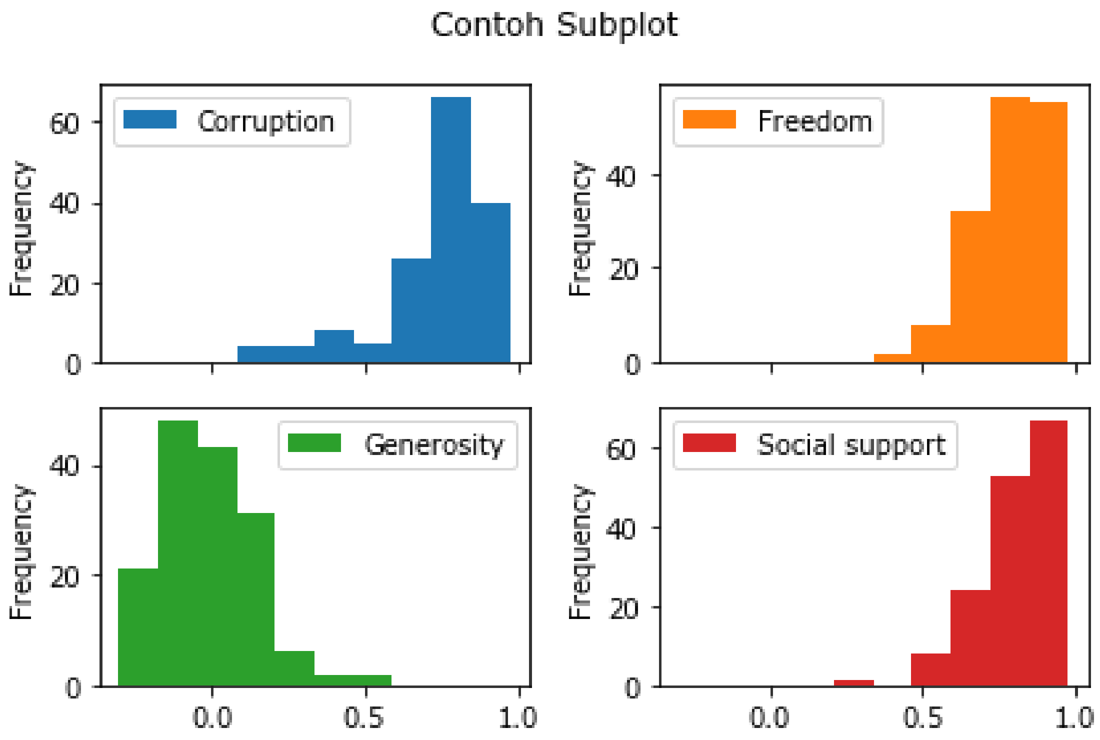
1.7 6. Histogram

[9]:

```
df.plot(x='Country', y='Corruption', kind='hist', bins=10)

plt.title('Contoh Histogram')
plt.xlabel('Nilai')

plt.show()
```



```
[10]: df.plot(x='Country',
              y=['Corruption', 'Freedom', 'Generosity', 'Social support'],
              kind='hist',
              subplots=True,
              layout=(2, 2))

      plt.suptitle('Contoh Subplot')
      plt.tight_layout()

      plt.show()
```


Contoh Subplot
Corruption
Freedom
Generosity
Social support
Frequency
Frequency
Frequency
Frequency
0
20
40
60
0
20
40
0
20
40
0
20
40
60
0.0
0.5
1.0
0.0
0.5
1.0

```
[ ]:
```