```
import pandas as pd
import matplotlib.pyplot as plt

data = pd.read_excel('WorldBank Data.xlsx')
data.head()
```

```
  Country Name Country Code      Region IncomeGroup  Year  \
0  Afghanistan          AFG  South Asia  Low income  2018
1  Afghanistan          AFG  South Asia  Low income  2017
2  Afghanistan          AFG  South Asia  Low income  2016
3  Afghanistan          AFG  South Asia  Low income  2015
4  Afghanistan          AFG  South Asia  Low income  2014

   Birth rate, crude (per 1,000 people)  Death rate, crude (per 1,000
people)  \
0                                   NaN
NaN
1                                33.211
6.575
2                                33.981
6.742
3                                34.809
6.929
4                                35.706
7.141

   Electric power consumption (kWh per capita)     GDP (USD)  \
0                                          NaN  1.936300e+10
1                                          NaN  2.019180e+10
2                                          NaN  1.936260e+10
3                                          NaN  1.990710e+10
4                                          NaN  2.048490e+10

   GDP per capita (USD)  Individuals using the Internet (% of
population)  \
0               520.897
NaN
1               556.302
13.50
2               547.228
11.20
3               578.466
8.26
4               613.856
7.00

   Infant mortality rate (per 1,000 live births)  \
0                                           47.9
1                                           49.5
2                                           51.2
```

```
3                                                 53.1
4                                                 55.1

   Life expectancy at birth (years)  \
0                                NaN
1                             64.130
2                             63.763
3                             63.377
4                             62.966

   Population density (people per sq. km of land area)  \
0                                            56.9378
1                                            55.5960
2                                            54.1971
3                                            52.7121
4                                            51.1148

   Unemployment (% of total labor force) (modeled ILO estimate)
0                                              1.542
1                                              1.559
2                                              1.634
3                                              1.679
4                                              1.735

data.tail()

      Country Name Country Code              Region IncomeGroup  Year
\
12444     Zimbabwe          ZWE  Sub-Saharan Africa  Low income  1964

12445     Zimbabwe          ZWE  Sub-Saharan Africa  Low income  1963

12446     Zimbabwe          ZWE  Sub-Saharan Africa  Low income  1962

12447     Zimbabwe          ZWE  Sub-Saharan Africa  Low income  1961

12448     Zimbabwe          ZWE  Sub-Saharan Africa  Low income  1960


       Birth rate, crude (per 1,000 people)  \
12444                                 47.770
12445                                 47.876
12446                                 47.950
12447                                 47.988
12448                                 47.996

       Death rate, crude (per 1,000 people)  \
12444                                 13.083
12445                                 13.419
12446                                 13.762
12447                                 14.104
```

```
12448                                    14.441

       Electric power consumption (kWh per capita)     GDP (USD)  \
12444                                            NaN  1.217138e+09
12445                                            NaN  1.159512e+09
12446                                            NaN  1.117602e+09
12447                                            NaN  1.096647e+09
12448                                            NaN  1.052990e+09

       GDP per capita (USD)  Individuals using the Internet (% of
population)  \
12444               281.558
NaN
12445               277.480
NaN
12446               276.689
NaN
12447               280.829
NaN
12448               278.814
NaN

       Infant mortality rate (per 1,000 live births)  \
12444                                            83.2
12445                                            85.7
12446                                            88.1
12447                                            90.5
12448                                            92.8

       Life expectancy at birth (years)  \
12444                            54.849
12445                            54.403
12446                            53.946
12447                            53.483
12448                            53.019

       Population density (people per sq. km of land area)  \
12444                                            11.1745
12445                                            10.8019
12446                                            10.4413
12447                                            10.0944
12448                                                NaN

       Unemployment (% of total labor force) (modeled ILO estimate)
12444                                                NaN
12445                                                NaN
12446                                                NaN
12447                                                NaN
12448                                                NaN
```

```
data.columns
```

```
Index(['Country Name', 'Country Code', 'Region', 'IncomeGroup',
'Year',
       'Birth rate, crude (per 1,000 people)',
       'Death rate, crude (per 1,000 people)',
       'Electric power consumption (kWh per capita)', 'GDP (USD)',
       'GDP per capita (USD)',
       'Individuals using the Internet (% of population)',
       'Infant mortality rate (per 1,000 live births)',
       'Life expectancy at birth (years)',
       'Population density (people per sq. km of land area)',
       'Unemployment (% of total labor force) (modeled ILO
estimate)'],
      dtype='object')
```

```
data.describe()
```

```
              Year  Birth rate, crude (per 1,000 people)  \
count  12449.00000                          11440.000000
mean    1989.00000                             28.643276
std       17.03007                             13.131893
min     1960.00000                              6.900000
25%     1974.00000                             16.600000
50%     1989.00000                             27.545500
75%     2004.00000                             40.881250
max     2018.00000                             58.227000

       Death rate, crude (per 1,000 people)  \
count                          11416.000000
mean                              10.588539
std                                5.489382
min                                1.127000
25%                                6.863750
50%                                9.200000
75%                               12.687000
max                               54.444000

       Electric power consumption (kWh per capita)     GDP (USD)  \
count                                   5848.000000  9.578000e+03
mean                                    3175.294686  1.700740e+11
std                                     4467.139298  8.979866e+11
min                                        0.000000  8.824450e+06
25%                                      390.385750  1.393010e+09
50%                                     1541.895000  7.275305e+09
75%                                     4313.767500  4.857782e+10
max                                    54799.200000  2.050000e+13

       GDP per capita (USD)  Individuals using the Internet (% of
population)  \
```

```
count            9575.000000
5064.000000
mean             8231.812259
23.334471
std             16173.539954
28.319388
min                34.790600
0.000000
25%                513.145500
0.594949
50%               1852.810000
8.406225
75%               7774.565000
41.295950
max             189171.000000
100.000000

       Infant mortality rate (per 1,000 live births)  \
count                                        9984.000000
mean                                           51.704437
std                                            46.131039
min                                             1.400000
25%                                            14.475000
50%                                            37.000000
75%                                            78.200000
max                                           279.400000

       Life expectancy at birth (years)  \
count                      11176.000000
mean                          64.044692
std                           11.491087
min                           18.907000
25%                           55.917750
50%                           67.276000
75%                           72.692250
max                           85.417100

       Population density (people per sq. km of land area)  \
count                                         11845.000000
mean                                            318.861370
std                                            1593.406041
min                                               0.098625
25%                                              19.783400
50%                                              64.007500
75%                                             144.823000
max                                           21389.100000

       Unemployment (% of total labor force) (modeled ILO estimate)
count                                          5208.000000
mean                                             8.295079
```

```
std                                                    6.290703
min                                                    0.140000
25%                                                    3.687000
50%                                                    6.775000
75%                                                   11.212250
max                                                   37.940000

data1=data.dropna()
data1.head()

   Country Name Country Code                  Region
IncomeGroup  \
63      Albania          ALB  Europe & Central Asia  Upper middle
income
64      Albania          ALB  Europe & Central Asia  Upper middle
income
65      Albania          ALB  Europe & Central Asia  Upper middle
income
66      Albania          ALB  Europe & Central Asia  Upper middle
income
67      Albania          ALB  Europe & Central Asia  Upper middle
income

    Year  Birth rate, crude (per 1,000 people)  \
63  2014                                  12.259
64  2013                                  12.257
65  2012                                  12.197
66  2011                                  12.100
67  2010                                  12.001

    Death rate, crude (per 1,000 people)  \
63                                 7.219
64                                 7.096
65                                 6.996
66                                 6.915
67                                 6.841

    Electric power consumption (kWh per capita)     GDP (USD)  \
63                                       2309.37  1.322820e+10
64                                       2533.25  1.277630e+10
65                                       2118.33  1.231980e+10
66                                       2205.70  1.289090e+10
67                                       1943.34  1.192700e+10

    GDP per capita (USD)  Individuals using the Internet (% of
population)  \
63               4578.67
60.100
64               4413.08
57.200
```

```
65                4247.61
54.656
66                4437.18
49.000
67                4094.36
45.000

    Infant mortality rate (per 1,000 live births)  \
63                                             8.9
64                                             9.5
65                                            10.2
66                                            11.0
67                                            11.9

    Life expectancy at birth (years)  \
63                             77.813
64                             77.554
65                             77.252
66                             76.914
67                             76.562

    Population density (people per sq. km of land area)  \
63                                            105.442
64                                            105.660
65                                            105.854
66                                            106.029
67                                            106.315

    Unemployment (% of total labor force) (modeled ILO estimate)
63                                             17.490
64                                             15.866
65                                             13.376
66                                             13.481
67                                             14.086

data1.isna().sum()

Country Name                                                    0
Country Code                                                    0
Region                                                          0
IncomeGroup                                                     0
Year                                                            0
Birth rate, crude (per 1,000 people)                            0
Death rate, crude (per 1,000 people)                            0
Electric power consumption (kWh per capita)                     0
GDP (USD)                                                       0
GDP per capita (USD)                                            0
Individuals using the Internet (% of population)                0
Infant mortality rate (per 1,000 live births)                   0
Life expectancy at birth (years)                                0
```

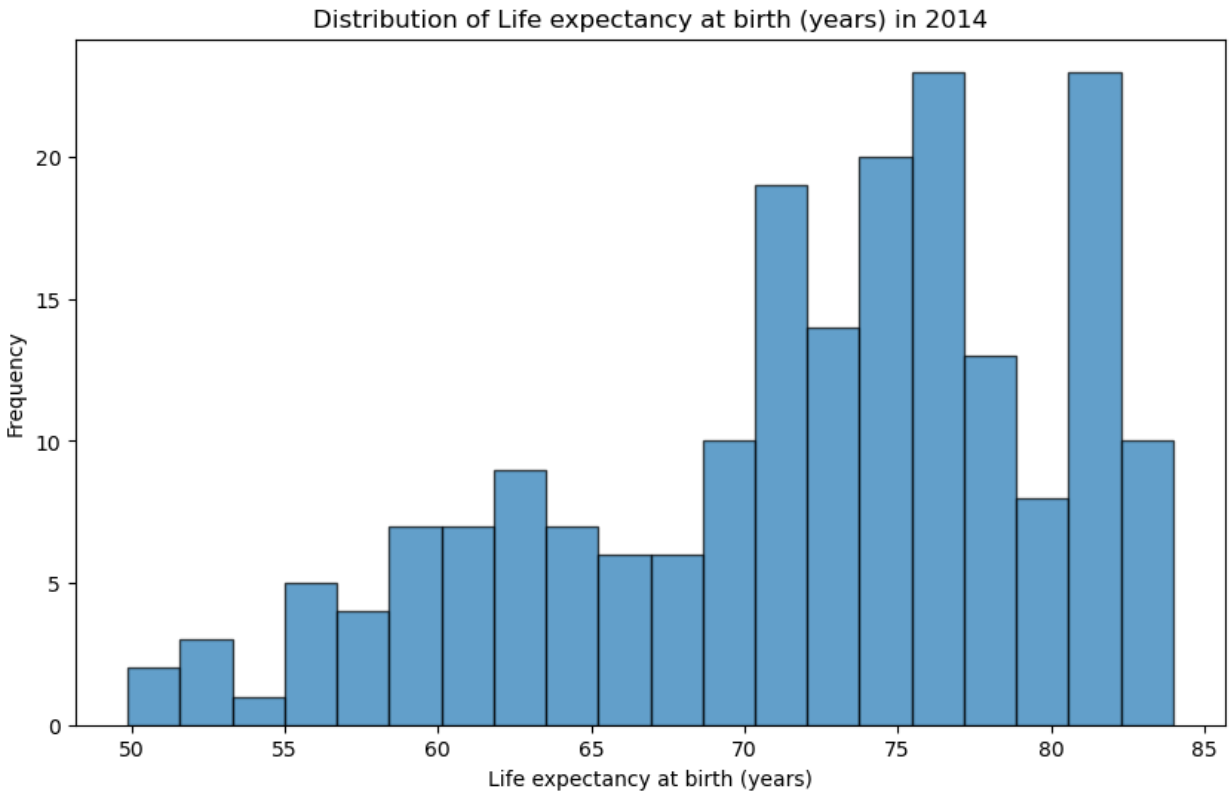
```
Population density (people per sq. km of land area)              0
Unemployment (% of total labor force) (modeled ILO estimate)     0
dtype: int64
```

```
data1.info()
```

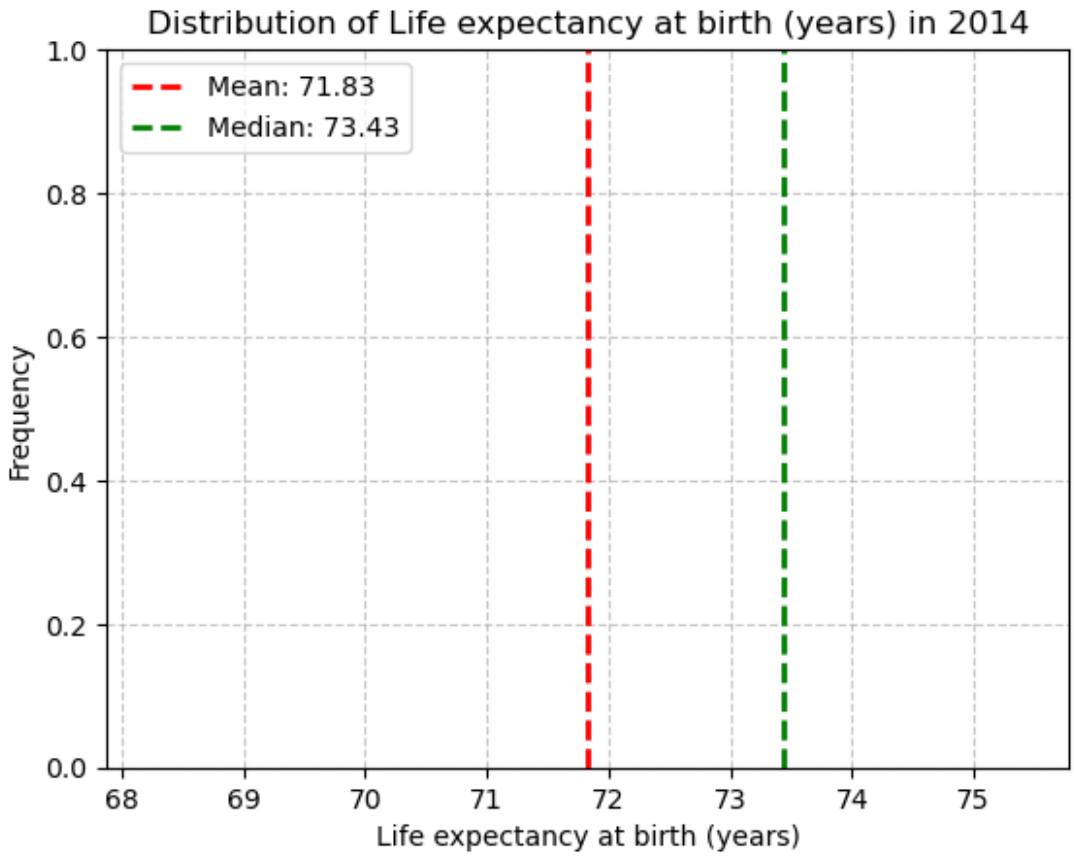
```
<class 'pandas.core.frame.DataFrame'>
Index: 2775 entries, 63 to 12414
Data columns (total 15 columns):
 #   Column
Non-Null Count  Dtype
---  ------
--------------  -----
 0   Country Name
2775 non-null   object
 1   Country Code
2775 non-null   object
 2   Region
2775 non-null   object
 3   IncomeGroup
2775 non-null   object
 4   Year
2775 non-null   int64
 5   Birth rate, crude (per 1,000 people)
2775 non-null   float64
 6   Death rate, crude (per 1,000 people)
2775 non-null   float64
 7   Electric power consumption (kWh per capita)
2775 non-null   float64
 8   GDP (USD)
2775 non-null   float64
 9   GDP per capita (USD)
2775 non-null   float64
 10  Individuals using the Internet (% of population)
2775 non-null   float64
 11  Infant mortality rate (per 1,000 live births)
2775 non-null   float64
 12  Life expectancy at birth (years)
2775 non-null   float64
 13  Population density (people per sq. km of land area)
2775 non-null   float64
 14  Unemployment (% of total labor force) (modeled ILO estimate)
2775 non-null   float64
dtypes: float64(10), int64(1), object(4)
memory usage: 346.9+ KB
```

```
year = 2014
variable = 'Life expectancy at birth (years)'

data_year = data[data['Year'] == year]
```

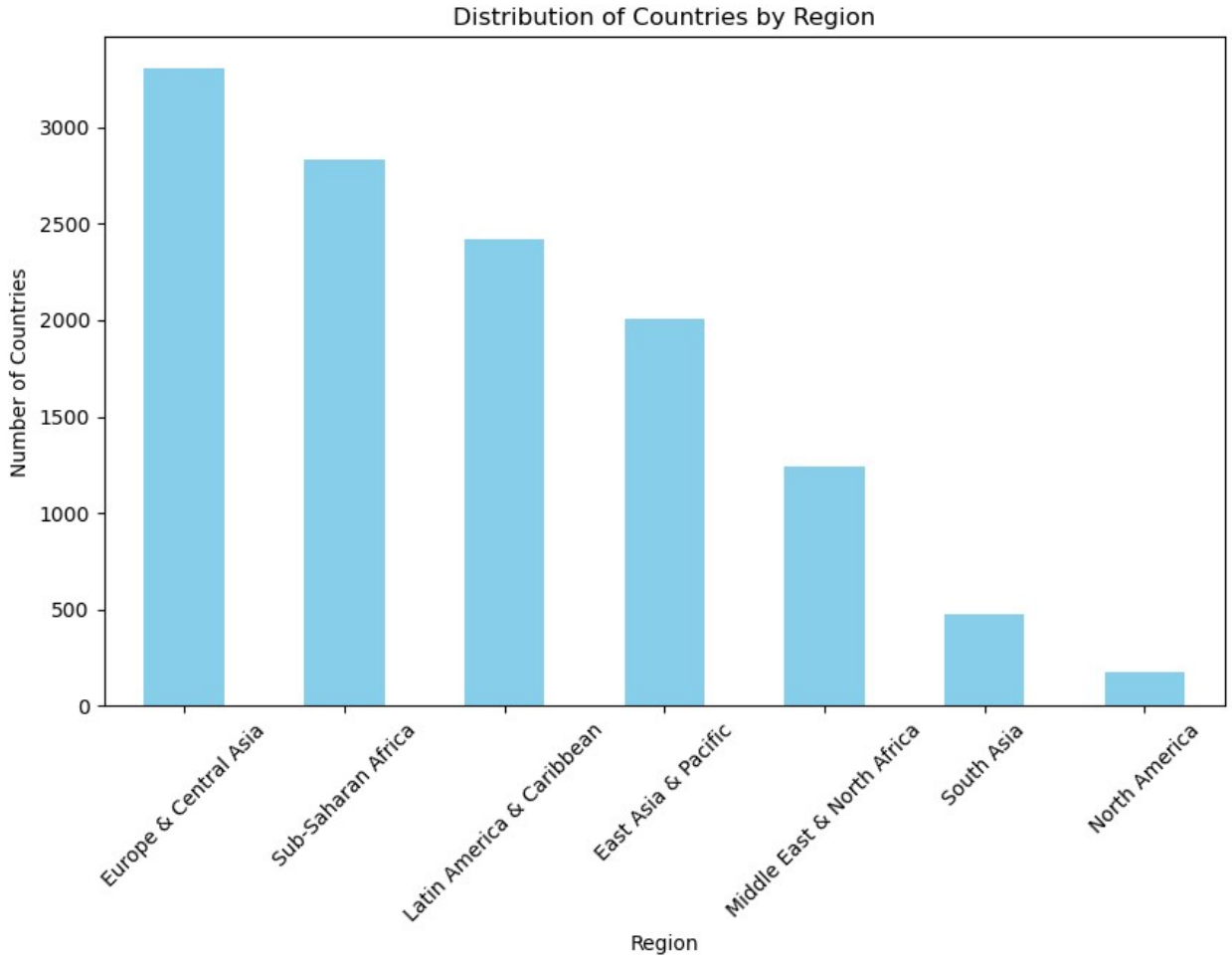
```
plt.figure(figsize=(10, 6))
plt.hist(data_year[variable], bins=20, edgecolor='k', alpha=0.7)

plt.title(f'Distribution of {variable} in {year}')
plt.xlabel(variable)
plt.ylabel('Frequency')
plt.show()
```




```
plt.title(f'Distribution of {variable} in {year}')
plt.xlabel(variable)
plt.ylabel('Frequency')
plt.grid(True, linestyle='--', alpha=0.7)
mean_value = data_year[variable].mean()
median_value = data_year[variable].median()
plt.axvline(mean_value, color='red', linestyle='dashed', linewidth=2,
label=f'Mean: {mean_value:.2f}')
plt.axvline(median_value, color='green', linestyle='dashed',
linewidth=2, label=f'Median: {median_value:.2f}')
plt.legend()
plt.show()
```




```
region_counts = data['Region'].value_counts()
plt.figure(figsize=(10, 6))
region_counts.plot(kind='bar', color='skyblue')
plt.xlabel('Region')
plt.ylabel('Number of Countries')
plt.title('Distribution of Countries by Region')
plt.xticks(rotation=45)
plt.show()
```


Distribution of Countries by Region
Number of Countries
0
500
1000
1500
2000
2500
3000
Europe & Central Asia
Sub-Saharan Africa
Latin America & Caribbean
East Asia & Pacific
Middle East & North Africa
South Asia
North America
Region