ml1days

December 18, 2024

```
[]:
      pandas
      import pandas as pd
      df=pd.read_csv(r"C:\Users\hp\Downloads\Titanic-Dataset.csv")
[70]: df
[70]:
                        Country
                                                           Region
                                                                      Year
      0
                    Afghanistan
                                                             Asia
                                                                    2007.5
                        Albania
      1
                                                  Rest of Europe
                                                                    2007.5
      2
                        Algeria
                                                           Africa
                                                                    2007.5
      3
                         Angola
                                                           Africa
                                                                    2007.5
      4
           Antigua and Barbuda
                                  Central America and Caribbean
                                                                    2007.5
      174
                  Venezuela, RB
                                                    South America 2007.5
      175
                        Vietnam
                                                             Asia 2007.5
                    Yemen, Rep.
                                                      Middle East
                                                                    2007.5
      176
      177
                          Zambia
                                                           Africa
                                                                    2007.5
      178
                       Zimbabwe
                                                                    2007.5
                                                           Africa
                            Under_five_deaths
            Infant_deaths
                                                Adult_mortality
                                                                   Alcohol_consumption
      0
                 71.08125
                                     98.61250
                                                      265.804969
                                                                               0.016125
      1
                 15.25625
                                     17.14375
                                                       83.132969
                                                                               4.696875
      2
                 26.75625
                                     31.19375
                                                      113.439281
                                                                               0.400625
      3
                 88.76875
                                     144.16250
                                                      297.844063
                                                                               4.935625
      4
                                                      142.478813
                                                                               7.755000
                  9.47500
                                     11.51875
      174
                 15.85000
                                     18.50000
                                                      151.056156
                                                                               7.458125
      175
                 19.50000
                                     24.47500
                                                      133.054406
                                                                               1.742500
      176
                                                                               0.047000
                 52.44375
                                     69.57500
                                                      239.653938
      177
                 60.58125
                                     99.20625
                                                      452.761219
                                                                               2.903125
      178
                 50.16875
                                     85.32500
                                                      572.974312
                                                                               2.900625
           Hepatitis_B
                         Measles
                                         BMI
                                                Polio
                                                        Diphtheria
                                                                     Incidents_HIV
      0
                64.5625
                         24.3750
                                   22.46250
                                              55.3750
                                                           55.1250
                                                                          0.022500
                98.0000
                                                           98.0625
      1
                         95.9375
                                   25.85625
                                              98.1250
                                                                          0.025625
      2
                88.3125
                         93.2500
                                              91.7500
                                                           91.8750
                                                                          0.021875
                                   24.86875
```

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                            •••
                                                           75.2500
                                                                          0.400000
      174
                72.4375
                         83.0000
                                   26.49375
                                              79.1875
      175
                87.4375
                         65.0000
                                   20.76250
                                              94.9375
                                                           91.7500
                                                                          0.196875
      176
                60.1875
                         95.0000
                                   23.02500
                                              71.6250
                                                           72.6250
                                                                          0.025000
                82.8750
      177
                         39.1875
                                   22.00000
                                              82.9375
                                                           83.8125
                                                                          6.868125
      178
                79.5625
                         64.0000
                                   23.54375
                                              79.5625
                                                           79.1250
                                                                          8.006250
           GDP_per_capita
                            Population_mln
                                              Thinness_ten_nineteen_years
      0
                  408.5625
                                  27.450625
                                                                   16.58125
      1
                 3071.1250
                                   2.969375
                                                                    1.61875
      2
                 3745.1250
                                  34.820625
                                                                    6.09375
      3
                 2647.8125
                                  21.623750
                                                                    6.19375
      4
                14678.7500
                                   0.085000
                                                                    3.42500
                 9294.8750
                                  27.392500
                                                                    1.65000
      174
      175
                 1807.8750
                                  86.032500
                                                                   14.92500
      176
                 2406.8125
                                  21.730625
                                                                   13.83125
      177
                 1059.8750
                                  12.862500
                                                                    6.88125
      178
                 1290.6250
                                  12.538750
                                                                    7.01250
           Thinness_five_nine_years
                                       Schooling
                                                   Economy_status
                                                                   Life_expectancy
                             15.58125
      0
                                          2.90000
                                                               1.0
                                                                            59.65625
      1
                              1.70000
                                          9.24375
                                                               1.0
                                                                            75.95000
      2
                              5.97500
                                          6.99375
                                                               1.0
                                                                            73.78750
      3
                              6.66875
                                          4.60625
                                                               1.0
                                                                            52.82500
      4
                              3.37500
                                          9.01875
                                                               1.0
                                                                            75.35000
      174
                              1.56250
                                          8.23750
                                                               1.0
                                                                            72.79375
      175
                                          6.90000
                                                               1.0
                                                                            74.33125
                             15.62500
                                                               1.0
      176
                             13.75000
                                          2.22500
                                                                            64.16250
      177
                                          6.43750
                                                               1.0
                                                                            52.33125
                              6.76250
      178
                                                               1.0
                                                                            48.66250
                              6.98750
                                          7.21250
      [179 rows x 20 columns]
 []: df.describe()
[72]: df.describe(include='all')
[72]:
                   Country
                             Region
                                       Year
                                              Infant deaths
                                                              Under five deaths
                       179
                                      179.0
                                                 179.000000
                                                                      179.000000
      count
                                179
      unique
                       179
                                  9
                                        NaN
                                                         NaN
                                                                             NaN
                                        NaN
                                                         NaN
                                                                             NaN
      top
               Afghanistan
                            Africa
      freq
                          1
                                 51
                                        NaN
                                                         NaN
                                                                             NaN
      mean
                       NaN
                                NaN
                                     2007.5
                                                  30.363792
                                                                       42.938268
```

3

4

68.8125

98.2500

64.0000

75.4375

22.51875

25.85000

35.7500

96.9375

55.5625

98.3125

1.303750

0.125000

std	NaN	NaN	0.0	26.	725485		42.916952		
min	NaN	NaN	2007.5				3.000000		
25%	NaN	NaN	2007.5				9.775000		
50%	NaN	NaN	2007.5		368750		23.137500		
75%	NaN	NaN	2007.5		959375		68.321875		
max	NaN	NaN	2007.5		718750		178.725000		
max	IVGIV	wan	2001.0	110.	110100		170.720000		
	Adult_mortalit	tv Alc	ohol con	sumption	Hepati	tis B	Measles	\	
count	179.00000	•	_	9.000000	-	00000	179.000000	`	
unique	Na			NaN		NaN	NaN		
top	Na			NaN		NaN	NaN		
freq	Na			NaN		NaN	NaN		
mean	192.25177			4.820882		92598	77.344972		
std	111.65904			4.020002 3.914554		20223	17.315208		
	57.71031			0.000025		87500	16.250000		
min									
25%	107.04690			1.317813		18750	64.000000		
50%	164.43240			4.209375		00000	83.000000		
75%	247.52392			7.843438		75000	92.250000		
max	572.97431	12	1	5.100000	98.8	75000	99.000000		
	DMT	D-1	i. Dimb	.	T	- IIIV	CDD	:+- \	
	BMI	Pol	-		Incident	00000	GDP_per_cap		
count		79.0000		000000	179.0		179.000		
unique	NaN		aN	NaN		NaN		NaN	
top	NaN		aN	NaN		NaN		NaN	
freq	NaN		aN -	NaN		NaN		NaN	
mean		36.4996		271648		94288	11540.924		
std		13.5811		931532		11895	16893.054		
min		35.7500		312500		10000	263.937		
25%		30.5312		812500		80000	1409.906		
50%	25.650000	92.3750	00 92.	062500	0.1	64375	4402.625	000	
75%	26.425000	96.0625	00 95.	781250	0.5	16250	12037.781	250	
max	31.687500	98.9375	00 99.	000000	18.1	64375	102972.687	500	
	Population_mlr		ness_ten	_ninetee	-0	Thinn	ess_five_nin	-•	
count	179.000000			179	.000000		179	.000000	
unique	Nal	N .			NaN			NaN	I
top	NaN	V			NaN			NaN	I
freq	NaN	1			NaN			NaN	Ī
mean	36.675915	5		4	.865852		4	.899825	<u> </u>
std	136.655286	3		4	.111094		4	.195663	3
min	0.085000)		0	.100000		0	.100000)
25%	2.108129	5		1	.756250		1	.731250)
50%	7.660625	5		3	.556250		3	.718750)
75%	22.745313	3		7	.165625		7	.056250)
max	1321.239375	5		27	.100000		27	.943750)

Schooling Economy_status Life_expectancy

count	179.000000	179.000000	179.000000
unique	NaN	NaN	NaN
top	NaN	NaN	NaN
freq	NaN	NaN	NaN
mean	7.632123	0.793296	68.856075
std	3.126912	0.406077	9.197699
min	1.337500	0.000000	45.606250
25%	4.946875	1.000000	62.303125
50%	7.831250	1.000000	71.506250
75%	10.365625	1.000000	74.937500
max	13.268750	1.000000	82.456250

[74]: df.describe(include='object')

[74]: Country Region count 179 179 unique 179 9 top Afghanistan Africa freq 1 51

[76]: df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 179 entries, 0 to 178
Data columns (total 20 columns):

#	Column	Non-Null Count	Dtype
0	Country	179 non-null	object
1	Region	179 non-null	object
2	Year	179 non-null	float64
3	Infant_deaths	179 non-null	float64
4	Under_five_deaths	179 non-null	float64
5	Adult_mortality	179 non-null	float64
6	Alcohol_consumption	179 non-null	float64
7	Hepatitis_B	179 non-null	float64
8	Measles	179 non-null	float64
9	BMI	179 non-null	float64
10	Polio	179 non-null	float64
11	Diphtheria	179 non-null	float64
12	Incidents_HIV	179 non-null	float64
13	GDP_per_capita	179 non-null	float64
14	Population_mln	179 non-null	float64
15	Thinness_ten_nineteen_years	179 non-null	float64
16	Thinness_five_nine_years	179 non-null	float64
17	Schooling	179 non-null	float64
18	Economy_status	179 non-null	float64
19	Life_expectancy	179 non-null	float64
34	£1+C4(40) -1+(0)		

dtypes: float64(18), object(2)

memory usage: 28.1+ KB

```
[78]: df.head()
[78]:
                      Country
                                                       Region
                                                                        Infant deaths
                                                                  Year
      0
                                                                2007.5
                                                                             71.08125
                 Afghanistan
                                                         Asia
      1
                      Albania
                                               Rest of Europe
                                                                2007.5
                                                                             15.25625
      2
                      Algeria
                                                       Africa
                                                                2007.5
                                                                             26.75625
      3
                       Angola
                                                       Africa
                                                                2007.5
                                                                             88.76875
         Antigua and Barbuda
                              Central America and Caribbean
                                                                2007.5
                                                                              9.47500
         Under_five_deaths
                             Adult_mortality
                                               Alcohol_consumption
                                                                     Hepatitis_B
      0
                   98.61250
                                  265.804969
                                                          0.016125
                                                                         64.5625
      1
                   17.14375
                                                          4.696875
                                                                         98.0000
                                   83.132969
      2
                   31.19375
                                  113.439281
                                                          0.400625
                                                                         88.3125
      3
                  144.16250
                                  297.844063
                                                          4.935625
                                                                         68.8125
      4
                   11.51875
                                  142.478813
                                                          7.755000
                                                                         98.2500
         Measles
                        BMI
                               Polio
                                      Diphtheria
                                                   Incidents_HIV
                                                                   GDP_per_capita
      0 24.3750
                  22.46250
                             55.3750
                                          55.1250
                                                        0.022500
                                                                         408.5625
      1 95.9375
                  25.85625
                             98.1250
                                          98.0625
                                                        0.025625
                                                                        3071.1250
      2 93.2500
                  24.86875
                             91.7500
                                          91.8750
                                                                        3745.1250
                                                        0.021875
      3 64.0000
                  22.51875
                             35.7500
                                          55.5625
                                                        1.303750
                                                                        2647.8125
      4 75.4375
                  25.85000
                             96.9375
                                          98.3125
                                                        0.125000
                                                                       14678.7500
         Population_mln
                          Thinness_ten_nineteen_years
                                                        Thinness_five_nine_years
                                                                         15.58125
      0
              27.450625
                                              16.58125
      1
               2.969375
                                               1.61875
                                                                          1.70000
      2
              34.820625
                                               6.09375
                                                                          5.97500
      3
              21.623750
                                               6.19375
                                                                          6.66875
      4
               0.085000
                                               3.42500
                                                                          3.37500
                                     Life_expectancy
         Schooling
                    Economy_status
      0
           2.90000
                                1.0
                                             59.65625
      1
           9.24375
                                1.0
                                             75.95000
      2
           6.99375
                                1.0
                                             73.78750
      3
           4.60625
                                1.0
                                             52.82500
      4
           9.01875
                                1.0
                                             75.35000
[80]: df.columns
[80]: Index(['Country', 'Region', 'Year', 'Infant_deaths', 'Under_five_deaths',
             'Adult_mortality', 'Alcohol_consumption', 'Hepatitis_B', 'Measles',
              'BMI', 'Polio', 'Diphtheria', 'Incidents_HIV', 'GDP_per_capita',
             'Population_mln', 'Thinness_ten_nineteen_years',
              'Thinness_five_nine_years', 'Schooling', 'Economy_status',
             'Life_expectancy'],
            dtype='object')
```

```
columns=df.iloc[0:5]
      columns
[82]:
                      Country
                                                        Region
                                                                   Year
                                                                         Infant deaths
      0
                  Afghanistan
                                                          Asia
                                                                 2007.5
                                                                              71.08125
                                                                 2007.5
      1
                      Albania
                                               Rest of Europe
                                                                               15.25625
      2
                                                                 2007.5
                                                                               26.75625
                      Algeria
                                                        Africa
      3
                       Angola
                                                        Africa
                                                                 2007.5
                                                                               88.76875
      4
         Antigua and Barbuda
                               Central America and Caribbean
                                                                 2007.5
                                                                                9.47500
         Under_five_deaths
                             Adult_mortality
                                               Alcohol_consumption
                                                                     Hepatitis_B
      0
                   98.61250
                                   265.804969
                                                           0.016125
                                                                          64.5625
      1
                   17.14375
                                    83.132969
                                                           4.696875
                                                                          98.0000
      2
                   31.19375
                                   113.439281
                                                           0.400625
                                                                          88.3125
      3
                  144.16250
                                   297.844063
                                                           4.935625
                                                                          68.8125
                   11.51875
                                   142.478813
                                                           7.755000
                                                                          98.2500
         Measles
                        BMI
                               Polio
                                       Diphtheria
                                                   Incidents_HIV
                                                                    GDP_per_capita
         24.3750
                  22.46250
                             55.3750
                                          55.1250
                                                         0.022500
                                                                          408.5625
                  25.85625
                             98.1250
      1 95.9375
                                          98.0625
                                                         0.025625
                                                                         3071.1250
      2 93.2500
                   24.86875
                             91.7500
                                          91.8750
                                                         0.021875
                                                                         3745.1250
                                          55.5625
      3 64.0000
                   22.51875
                             35.7500
                                                         1.303750
                                                                         2647.8125
      4 75.4375
                   25.85000
                             96.9375
                                          98.3125
                                                         0.125000
                                                                        14678.7500
         Population_mln
                          Thinness_ten_nineteen_years
                                                         Thinness_five_nine_years
      0
              27.450625
                                               16.58125
                                                                          15.58125
      1
               2.969375
                                                1.61875
                                                                           1.70000
      2
              34.820625
                                               6.09375
                                                                           5.97500
      3
              21.623750
                                                6.19375
                                                                           6.66875
               0.085000
                                               3.42500
                                                                           3.37500
                     Economy_status Life_expectancy
         Schooling
      0
           2.90000
                                 1.0
                                             59.65625
           9.24375
      1
                                 1.0
                                              75.95000
      2
           6.99375
                                 1.0
                                             73.78750
      3
           4.60625
                                 1.0
                                              52.82500
      4
           9.01875
                                 1.0
                                              75.35000
[84]: df.isnull()
[84]:
           Country
                     Region
                              Year
                                     Infant_deaths
                                                     Under_five_deaths
                      False
                                                                  False
      0
             False
                             False
                                             False
      1
             False
                      False
                             False
                                             False
                                                                  False
      2
                             False
                                                                  False
             False
                      False
                                             False
      3
             False
                      False
                             False
                                             False
                                                                  False
      4
                             False
             False
                      False
                                             False
                                                                  False
```

[82]: #view first 5 columns

```
174
                                                          False
       False
               False False
                                      False
175
       False
               False False
                                      False
                                                          False
                                                          False
176
       False
               False False
                                      False
177
       False
               False False
                                      False
                                                          False
178
       False
               False
                     False
                                      False
                                                          False
     Adult_mortality Alcohol_consumption Hepatitis_B Measles
                                                                     BMI Polio \
0
                                     False
                                                                          False
               False
                                                  False
                                                            False False
1
               False
                                     False
                                                  False
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                                                                          False
2
               False
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                                                  False
                                                            False False False
3
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                                     False
                                                  False
                                                            False False False
4
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174
               False
                                     False
                                                            False False False
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175
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                                                            False False False
                                                            False False False
176
               False
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177
                                     False
                                                            False False
                                                                          False
               False
                                                  False
178
                                                            False False False
               False
                                     False
                                                  False
     Diphtheria Incidents_HIV GDP_per_capita Population_mln \
0
          False
                         False
                                          False
                                                           False
1
          False
                         False
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2
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3
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4
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174
          False
                                                           False
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175
          False
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176
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177
          False
                         False
                                          False
                                                           False
178
          False
                         False
                                          False
                                                           False
     Thinness_ten_nineteen_years
                                   Thinness_five_nine_years
                                                              Schooling \
0
                           False
                                                      False
                                                                  False
1
                           False
                                                      False
                                                                  False
2
                           False
                                                      False
                                                                  False
3
                           False
                                                      False
                                                                  False
4
                           False
                                                      False
                                                                  False
                             •••
174
                           False
                                                      False
                                                                  False
175
                           False
                                                      False
                                                                  False
176
                           False
                                                      False
                                                                  False
177
                           False
                                                      False
                                                                  False
178
                           False
                                                      False
                                                                  False
```

Economy_status Life_expectancy

	0	False	False
	1	False	False
	2	False	False
	3	False	False
	4	False	False
		•••	•••
	174	False	False
	175	False	False
	176	False	False
	177	False	False
	178	False	False
	[179 rows x 2	20 columns]	
[86]:	df.isnull().s	sum()	
[06].	Country		0
[00]:	•		0
	Region Year		0
	Infant_deaths	•	0
	Under_five_de		0
	Adult_mortali		0
	Alcohol_consu	-	0
	Hepatitis_B	mption	0
	Measles		0
	BMI		0
	Polio		
			0
	Diphtheria	7	0
	<pre>Incidents_HIV GDP_per_capit</pre>		0 0
	Population_ml		0
	_	nineteen_years	0
		•	
	Thinness_five	e_nine_years	0
	Schooling		0
	Economy_statu		0
	Life_expectan	icy	O
	dtype: int64		
[88]:	#Clean the Do	n t a	
[00].	df.dropna(inp		
	di.diopiia(iiip	Jiace-Iiue/	
[90]:	df.shape		
[90]:	(179, 20)		
[92]:	# previewing	dataset	
[02].	df.sample(5)		
	ar.pampre(0)		

```
[92]:
                                                 Infant_deaths Under_five_deaths \
               Country
                                 Region
                                           Year
      5
             Argentina
                                        2007.5
                                                      13.85000
                                                                          15.50625
                         South America
      52
               Eritrea
                                 Africa 2007.5
                                                      43.28750
                                                                          62.59375
      132
               Romania European Union 2007.5
                                                      12.90625
                                                                          15.23125
                        Rest of Europe
      61
               Georgia
                                         2007.5
                                                      18.06250
                                                                          20.38125
                           Middle East
      176
          Yemen, Rep.
                                         2007.5
                                                      52.44375
                                                                          69.57500
           Adult_mortality
                           Alcohol_consumption Hepatitis_B
                                                               Measles
                                                                              BMI
                                                                                   \
      5
                127.912656
                                        7.959375
                                                      85.3125 84.6875
                                                                         26.85000
      52
                314.237875
                                        0.996875
                                                      91.8750 88.0000
                                                                         20.43125
      132
                153.233812
                                       10.583750
                                                      96.8750 92.8750
                                                                         25.71875
      61
                170.071969
                                        5.524375
                                                      77.2500 75.7500
                                                                         26.58750
      176
                239.653938
                                        0.047000
                                                      60.1875 95.0000
                                                                         23.02500
                                                GDP_per_capita Population_mln \
             Polio
                    Diphtheria Incidents_HIV
      5
                                                                      39.913125
           92,2500
                        92.375
                                      0.145625
                                                    12169.1250
      52
           93.5625
                        92.375
                                      0.333750
                                                     1267.5000
                                                                       2.759375
      132 94.7500
                        95.000
                                      0.043125
                                                     7011.0625
                                                                      20.861875
      61
           86.2500
                        88.000
                                      0.091250
                                                     2780.5625
                                                                       3.856250
      176 71.6250
                        72.625
                                      0.025000
                                                     2406.8125
                                                                      21.730625
           Thinness ten nineteen years Thinness five nine years
                                                                    Schooling \
      5
                                1.07500
                                                          0.95000
                                                                      9.36875
      52
                                8.08125
                                                          8.01875
                                                                      3.79375
      132
                                3.16875
                                                          3.50625
                                                                     10.37500
      61
                                2.75000
                                                          2.89375
                                                                     12.18125
      176
                               13.83125
                                                         13.75000
                                                                      2.22500
           Economy_status
                           Life_expectancy
      5
                      1.0
                                   74.86250
      52
                      1.0
                                   60.28125
      132
                      0.0
                                   72.88125
      61
                      1.0
                                   71.15625
      176
                      1.0
                                   64.16250
[94]: df.dtypes
[94]: Country
                                       object
      Region
                                       object
      Year
                                      float64
      Infant deaths
                                      float64
      Under_five_deaths
                                      float64
      Adult_mortality
                                      float64
      Alcohol_consumption
                                      float64
      Hepatitis_B
                                      float64
      Measles
                                      float64
```

float64

BMI

Polio float64 Diphtheria float64 Incidents_HIV float64 GDP_per_capita float64 Population_mln float64 Thinness_ten_nineteen_years float64 Thinness_five_nine_years float64 Schooling float64 Economy_status float64 Life_expectancy float64 dtype: object

[96]: # view first row row=df.iloc[0]

row

[96]: Country Afghanistan Region Asia Year 2007.5 Infant_deaths 71.08125 Under_five_deaths 98.6125 Adult_mortality 265.804969 Alcohol_consumption 0.016125 Hepatitis_B 64.5625 Measles 24.375 BMI 22.4625 Polio 55.375 Diphtheria 55.125 Incidents_HIV 0.0225 GDP_per_capita 408.5625 Population_mln 27.450625 Thinness_ten_nineteen_years 16.58125 Thinness_five_nine_years 15.58125 Schooling 2.9 Economy_status 1.0 59.65625 Life_expectancy

Name: 0, dtype: object

[98]: #view first 5 row row=df.iloc[0:5] row

[98]:	Country	Region	Year	Infant_deaths	\
0	Afghanistan	Asia	2007.5	71.08125	
1	Albania	Rest of Europe	2007.5	15.25625	
2	Algeria	Africa	2007.5	26.75625	
3	Angola	Africa	2007.5	88.76875	

```
Adult_mortality Alcohol_consumption
          Under_five_deaths
                                                                      Hepatitis_B
       0
                                                            0.016125
                    98.61250
                                   265.804969
                                                                          64.5625
       1
                   17.14375
                                    83.132969
                                                            4.696875
                                                                          98.0000
       2
                   31.19375
                                   113.439281
                                                            0.400625
                                                                          88.3125
       3
                  144.16250
                                   297.844063
                                                            4.935625
                                                                          68.8125
       4
                    11.51875
                                   142.478813
                                                            7.755000
                                                                          98.2500
                                                    Incidents_HIV
          Measles
                         BMI
                                Polio
                                       Diphtheria
                                                                    GDP_per_capita
       0 24.3750 22.46250
                              55.3750
                                           55.1250
                                                          0.022500
                                                                          408.5625
       1 95.9375 25.85625
                              98.1250
                                           98.0625
                                                         0.025625
                                                                         3071.1250
       2 93.2500 24.86875
                              91.7500
                                           91.8750
                                                         0.021875
                                                                         3745.1250
       3 64.0000
                   22.51875
                              35.7500
                                           55.5625
                                                         1.303750
                                                                         2647.8125
       4 75.4375
                   25.85000
                              96.9375
                                           98.3125
                                                         0.125000
                                                                        14678.7500
          Population_mln
                           Thinness_ten_nineteen_years
                                                         Thinness_five_nine_years
       0
               27.450625
                                               16.58125
                                                                          15.58125
       1
                2.969375
                                                1.61875
                                                                           1.70000
       2
               34.820625
                                                6.09375
                                                                           5.97500
       3
               21.623750
                                                6.19375
                                                                           6.66875
       4
                0.085000
                                                3.42500
                                                                           3.37500
          Schooling
                     Economy_status Life_expectancy
            2.90000
       0
                                 1.0
                                              59.65625
       1
            9.24375
                                 1.0
                                              75.95000
            6.99375
                                 1.0
                                              73.78750
       3
            4.60625
                                 1.0
                                              52.82500
       4
            9.01875
                                 1.0
                                              75.35000
[108]: df['Fare'].value_counts()
[108]: Fare
       8.0500
                  43
       13.0000
                  42
       7.8958
                  38
       7.7500
                  34
       26.0000
                  31
       35.0000
       28.5000
       6.2375
                    1
       14.0000
                    1
       10.5167
                    1
       Name: count, Length: 248, dtype: int64
[102]: df['Fare'].unique()
```

4 Antigua and Barbuda Central America and Caribbean 2007.5

9.47500

```
KeyError
                                          Traceback (most recent call last)
File ~\anaconda3\Lib\site-packages\pandas\core\indexes\base.py:3805, in Index.

get_loc(self, key)
  3804 try:
-> 3805
            return self._engine.get_loc(casted_key)
   3806 except KeyError as err:
File index.pyx:167, in pandas. libs.index.IndexEngine.get loc()
File index.pyx:196, in pandas._libs.index.IndexEngine.get_loc()
File pandas\\_libs\\hashtable_class_helper.pxi:7081, in pandas._libs.hashtable.
 →PyObjectHashTable.get_item()
File pandas\\_libs\\hashtable_class_helper.pxi:7089, in pandas._libs.hashtable.
 →PyObjectHashTable.get_item()
KeyError: 'Fare'
The above exception was the direct cause of the following exception:
KeyError
                                          Traceback (most recent call last)
Cell In[102], line 1
----> 1 df['Fare'].unique()
File ~\anaconda3\Lib\site-packages\pandas\core\frame.py:4102, in DataFrame.

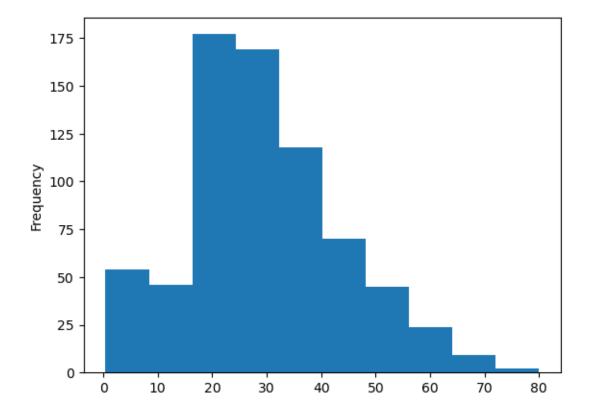
    getitem__(self, key)

   4100 if self.columns.nlevels > 1:
            return self. getitem multilevel(key)
-> 4102 indexer = self.columns.get_loc(key)
   4103 if is_integer(indexer):
   4104
            indexer = [indexer]
File ~\anaconda3\Lib\site-packages\pandas\core\indexes\base.py:3812, in Index.
 →get_loc(self, key)
            if isinstance(casted_key, slice) or (
   3807
                isinstance(casted_key, abc.Iterable)
   3808
                and any(isinstance(x, slice) for x in casted_key)
   3809
   3810
            ):
                raise InvalidIndexError(key)
   3811
-> 3812
            raise KeyError(key) from err
   3813 except TypeError:
   3814
           # If we have a listlike key, _check_indexing_error will raise
            # InvalidIndexError. Otherwise we fall through and re-raise
   3815
           # the TypeError.
  3816
   3817
            self._check_indexing_error(key)
```

```
KeyError: 'Fare'
[182]: Fare=df['Fare']
[110]: df['Fare'].nunique()
[110]: 248
[112]: df['Pclass'].nunique()
[112]: 3
[114]: df['Pclass'].unique()
[114]: array([3, 1, 2], dtype=int64)
[116]: df['Pclass'].value_counts()
[116]: Pclass
       3
            491
            216
       1
            184
       Name: count, dtype: int64
[118]: df['Pclass'].value_counts(normalize=True)
[118]: Pclass
            0.551066
       3
            0.242424
       1
            0.206510
       Name: proportion, dtype: float64
[120]: df['Sex'].unique()
[120]: array(['male', 'female'], dtype=object)
[122]: df['Sex'].nunique()
[122]: 2
[124]: df['Sex'].value_counts()
[124]: Sex
       male
                 577
       female
                 314
       Name: count, dtype: int64
```

```
[126]: df['Age'].value_counts()
[126]: Age
       24.00
                 30
       22.00
                 27
       18.00
                 26
       19.00
                 25
       28.00
                 25
       36.50
                  1
       55.50
                  1
       0.92
                  1
       23.50
                  1
       74.00
                  1
       Name: count, Length: 88, dtype: int64
[128]: df['Age'].plot.hist()
```

[128]: <Axes: ylabel='Frequency'>



```
[130]: df['Cabin'].unique()
```

```
[130]: array([nan, 'C85', 'C123', 'E46', 'G6', 'C103', 'D56', 'A6',
              'C23 C25 C27', 'B78', 'D33', 'B30', 'C52', 'B28', 'C83', 'F33',
              'F G73', 'E31', 'A5', 'D10 D12', 'D26', 'C110', 'B58 B60', 'E101',
              'F E69', 'D47', 'B86', 'F2', 'C2', 'E33', 'B19', 'A7', 'C49', 'F4',
              'A32', 'B4', 'B80', 'A31', 'D36', 'D15', 'C93', 'C78', 'D35',
              'C87', 'B77', 'E67', 'B94', 'C125', 'C99', 'C118', 'D7', 'A19',
              'B49', 'D', 'C22 C26', 'C106', 'C65', 'E36', 'C54',
              'B57 B59 B63 B66', 'C7', 'E34', 'C32', 'B18', 'C124', 'C91', 'E40',
              'T', 'C128', 'D37', 'B35', 'E50', 'C82', 'B96 B98', 'E10', 'E44',
              'A34', 'C104', 'C111', 'C92', 'E38', 'D21', 'E12', 'E63', 'A14',
              'B37', 'C30', 'D20', 'B79', 'E25', 'D46', 'B73', 'C95', 'B38',
              'B39', 'B22', 'C86', 'C70', 'A16', 'C101', 'C68', 'A10', 'E68',
              'B41', 'A20', 'D19', 'D50', 'D9', 'A23', 'B50', 'A26', 'D48',
              'E58', 'C126', 'B71', 'B51 B53 B55', 'D49', 'B5', 'B20', 'F G63',
              'C62 C64', 'E24', 'C90', 'C45', 'E8', 'B101', 'D45', 'C46', 'D30',
              'E121', 'D11', 'E77', 'F38', 'B3', 'D6', 'B82 B84', 'D17', 'A36',
              'B102', 'B69', 'E49', 'C47', 'D28', 'E17', 'A24', 'C50', 'B42',
              'C148'], dtype=object)
[132]: df['Cabin'].nunique()
[132]: 147
[134]: df['Cabin'].isnull().sum()
[134]: 687
[136]: df['Cabin'].dropna()
[136]: 1
                      C85
       3
                     C123
       6
                      E46
       10
                       G6
                     C103
       11
       871
                      D35
              B51 B53 B55
       872
       879
                      C50
       887
                      B42
       889
                     C148
       Name: Cabin, Length: 204, dtype: object
[138]: df['Cabin'].dropna().isnull().sum()
[138]: 0
[140]: df['Cabin'].fillna(0).isnull().sum()
```

```
[142]: df['Cabin'].fillna(0).unique()
[142]: array([0, 'C85', 'C123', 'E46', 'G6', 'C103', 'D56', 'A6', 'C23 C25 C27',
              'B78', 'D33', 'B30', 'C52', 'B28', 'C83', 'F33', 'F G73', 'E31',
              'A5', 'D10 D12', 'D26', 'C110', 'B58 B60', 'E101', 'F E69', 'D47',
              'B86', 'F2', 'C2', 'E33', 'B19', 'A7', 'C49', 'F4', 'A32', 'B4',
              'B80', 'A31', 'D36', 'D15', 'C93', 'C78', 'D35', 'C87', 'B77',
              'E67', 'B94', 'C125', 'C99', 'C118', 'D7', 'A19', 'B49', 'D',
              'C22 C26', 'C106', 'C65', 'E36', 'C54', 'B57 B59 B63 B66', 'C7',
              'E34', 'C32', 'B18', 'C124', 'C91', 'E40', 'T', 'C128', 'D37',
              'B35', 'E50', 'C82', 'B96 B98', 'E10', 'E44', 'A34', 'C104',
              'C111', 'C92', 'E38', 'D21', 'E12', 'E63', 'A14', 'B37', 'C30',
              'D20', 'B79', 'E25', 'D46', 'B73', 'C95', 'B38', 'B39', 'B22',
              'C86', 'C70', 'A16', 'C101', 'C68', 'A10', 'E68', 'B41', 'A20',
              'D19', 'D50', 'D9', 'A23', 'B50', 'A26', 'D48', 'E58', 'C126',
              'B71', 'B51 B53 B55', 'D49', 'B5', 'B20', 'F G63', 'C62 C64',
              'E24', 'C90', 'C45', 'E8', 'B101', 'D45', 'C46', 'D30', 'E121',
              'D11', 'E77', 'F38', 'B3', 'D6', 'B82 B84', 'D17', 'A36', 'B102',
              'B69', 'E49', 'C47', 'D28', 'E17', 'A24', 'C50', 'B42', 'C148'],
             dtype=object)
[144]: df.Cabin
[144]: 0
               NaN
       1
               C85
       2
               NaN
       3
              C123
       4
               NaN
       886
               NaN
       887
               B42
       888
               NaN
       889
              C148
       890
               NaN
       Name: Cabin, Length: 891, dtype: object
[148]: df['Cabin'].fillna('deck',inplace=True)
[150]: df
[150]:
            PassengerId Survived Pclass
                                 0
                                         3
       0
                      1
                      2
                                 1
       1
                                         1
       2
                      3
                                 1
                                         3
       3
                      4
                                 1
                                         1
       4
                      5
                                 0
                                         3
```

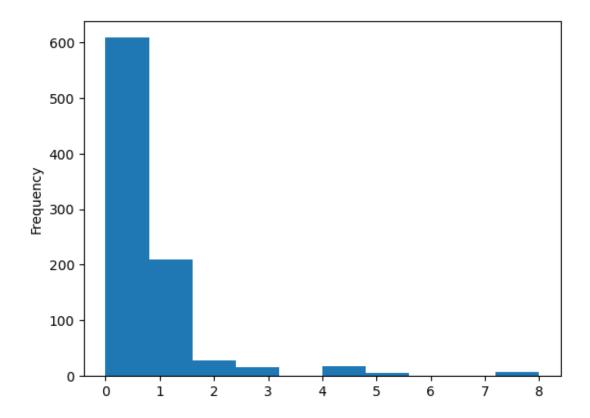
[140]: 0

```
2
886
              887
                           0
887
              888
                           1
                                    1
                           0
                                    3
888
              889
889
              890
                           1
                                    1
890
              891
                           0
                                    3
                                                      Name
                                                                Sex
                                                                       Age
                                                                            SibSp \
0
                                 Braund, Mr. Owen Harris
                                                                      22.0
                                                               male
1
     Cumings, Mrs. John Bradley (Florence Briggs Th... female
                                                                   38.0
                                                                               1
2
                                   Heikkinen, Miss. Laina
                                                             female
                                                                      26.0
                                                                                 0
3
          Futrelle, Mrs. Jacques Heath (Lily May Peel)
                                                             female
                                                                      35.0
                                                                                 1
                                                               male
4
                                Allen, Mr. William Henry
                                                                      35.0
                                                                                 0
                                                                        •••
                                    Montvila, Rev. Juozas
                                                                                 0
886
                                                               male
                                                                      27.0
887
                            Graham, Miss. Margaret Edith
                                                             female
                                                                      19.0
                                                                                 0
888
               Johnston, Miss. Catherine Helen "Carrie"
                                                             female
                                                                       NaN
                                                                                 1
889
                                    Behr, Mr. Karl Howell
                                                                      26.0
                                                                                 0
                                                               male
890
                                      Dooley, Mr. Patrick
                                                                                 0
                                                               male
                                                                      32.0
                                    Fare Cabin Embarked
     Parch
                        Ticket
0
         0
                    A/5 21171
                                 7.2500
                                          deck
                                                        S
1
         0
                     PC 17599
                                71.2833
                                           C85
                                                        С
2
         0
             STON/02. 3101282
                                 7.9250
                                          deck
                                                        S
3
         0
                        113803
                                53.1000
                                          C123
                                                        S
4
         0
                        373450
                                 8.0500
                                          deck
                                                        S
. .
886
         0
                                13.0000
                                          deck
                                                        S
                        211536
887
         0
                        112053
                                30.0000
                                           B42
                                                        S
888
         2
                   W./C. 6607
                                                        S
                                23.4500
                                          deck
889
         0
                                30.0000
                                          C148
                                                        С
                        111369
890
                        370376
                                                        Q
                                 7.7500
                                          deck
```

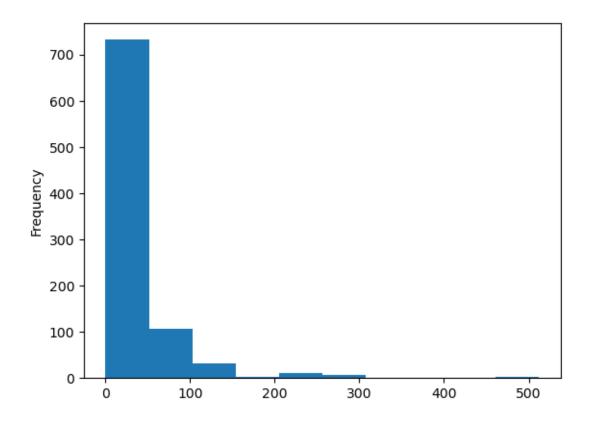
[891 rows x 12 columns]

```
[152]: df['SibSp'].plot.hist()
```

[152]: <Axes: ylabel='Frequency'>

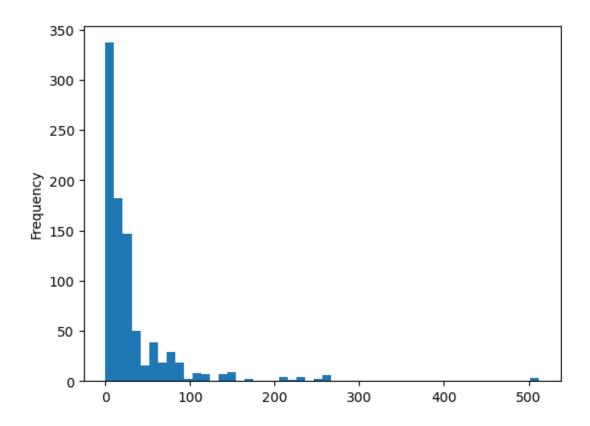


```
[154]: df.Age.skew()
[154]: 0.38910778230082704
[156]: df.SibSp.skew()
[156]: 3.6953517271630565
[158]: df['Fare'].plot.hist()
[158]: <Axes: ylabel='Frequency'>
```



```
[160]:
       df.Fare.skew()
[160]: 4.787316519674893
       df['Fare'].mean()
[162]:
[162]: 32.204207968574636
      df['Age'].mean()
[164]:
[164]: 29.69911764705882
[166]:
       df.describe()
              PassengerId
[166]:
                              Survived
                                             Pclass
                                                             Age
                                                                       SibSp
               891.000000
                            891.000000
                                         891.000000
                                                     714.000000
                                                                  891.000000
       count
                                           2.308642
                                                       29.699118
       mean
               446.000000
                              0.383838
                                                                    0.523008
       std
               257.353842
                              0.486592
                                           0.836071
                                                       14.526497
                                                                    1.102743
       min
                  1.000000
                              0.00000
                                           1.000000
                                                       0.420000
                                                                    0.000000
       25%
               223.500000
                              0.000000
                                           2.000000
                                                       20.125000
                                                                    0.00000
       50%
               446.000000
                              0.000000
                                           3.000000
                                                       28.000000
                                                                    0.000000
       75%
               668.500000
                              1.000000
                                           3.000000
                                                       38.000000
                                                                    1.000000
```

```
891.000000
                             1.000000
                                         3.000000
                                                     80.000000
                                                                  8.000000
      max
                   Parch
                                Fare
              891.000000 891.000000
       count
                0.381594
                           32.204208
      mean
       std
                0.806057
                           49.693429
                0.000000
      min
                           0.000000
       25%
                0.000000
                            7.910400
       50%
                0.000000
                           14.454200
       75%
                0.000000
                           31.000000
                6.000000 512.329200
       max
[168]: df.Age.mode()
[168]: 0
            24.0
       Name: Age, dtype: float64
[170]: df.Fare.mode()
[170]: 0
            8.05
       Name: Fare, dtype: float64
[172]: df.Fare.median()
[172]: 14.4542
[174]: df.Age.median()
[174]: 28.0
[176]: df['Fare'].plot.hist(bins=50)
[176]: <Axes: ylabel='Frequency'>
```



```
df.loc[2:5]
[178]:
[178]:
           {\tt PassengerId}
                         Survived
                                    Pclass
       2
                      3
                                 1
                                          3
       3
                      4
                                 1
                                          1
       4
                      5
                                 0
                                          3
       5
                      6
                                 0
                                          3
                                                       Name
                                                                 Sex
                                                                       Age
                                                                             SibSp
                                                                                     Parch
       2
                                   Heikkinen, Miss. Laina
                                                             female
                                                                      26.0
                                                                                 0
       3
          Futrelle, Mrs. Jacques Heath (Lily May Peel)
                                                                      35.0
                                                                                         0
                                                             female
                                                                                 1
       4
                                 Allen, Mr. William Henry
                                                                {\tt male}
                                                                      35.0
                                                                                 0
                                                                                         0
       5
                                         Moran, Mr. James
                                                                male
                                                                       NaN
                                                                                 0
                                                                                         0
                      Ticket
                                  Fare Cabin Embarked
           STON/02. 3101282
                               7.9250
                                        deck
       3
                               53.1000
                                        C123
                                                      S
                      113803
                      373450
                                                      S
       4
                                8.0500
                                        deck
                      330877
                                                      Q
                                8.4583
                                        deck
[180]: df.iloc[2:5]
```

```
[180]:
          PassengerId Survived Pclass \
                    3
       2
                               1
                                       3
                    4
                               1
                                       1
       3
       4
                    5
                              0
                                       3
                                                   Name
                                                            Sex
                                                                   Age SibSp
                                                                               Parch
       2
                                Heikkinen, Miss. Laina female
                                                                 26.0
                                                                            0
                                                                                   0
         Futrelle, Mrs. Jacques Heath (Lily May Peel)
                                                         female
                                                                 35.0
                                                                            1
                                                                                   0
                              Allen, Mr. William Henry
                                                           male 35.0
                                                                            0
                                                                                   0
                              Fare Cabin Embarked
                    Ticket
       2
          STON/02. 3101282
                             7.925 deck
                                                 S
                            53.100 C123
                                                 S
       3
                    113803
       4
                    373450
                             8.050 deck
                                                 S
  []:
  []:
  []:
  []:
  []:
  []:
  []:
  []:
      data set 2
  [9]: import pandas as pd
[15]: df=pd.read_csv(r"C:\Users\hp\Downloads\Life-Expectancy-Data-Averaged.csv")
       df
[15]:
                        Country
                                                         Region
                                                                    Year
       0
                    Afghanistan
                                                           Asia 2007.5
       1
                        Albania
                                                 Rest of Europe
                                                                 2007.5
       2
                                                         Africa
                        Algeria
                                                                 2007.5
       3
                                                         Africa 2007.5
                         Angola
       4
                                 Central America and Caribbean 2007.5
            Antigua and Barbuda
       . .
       174
                  Venezuela, RB
                                                  South America 2007.5
       175
                        Vietnam
                                                           Asia 2007.5
       176
                    Yemen, Rep.
                                                    Middle East 2007.5
```

177	Zambia				Africa	2007.5		
178	Zimbabwe				Africa	2007.5		
	Infant_deaths	s Under_five	a daatha	. Adul+	mortality	Alcohol_consum	ntion	\
0	71.08125	_	98.61250	_	65.804969	_	16125	`
1	15.25625		17.14375		83.132969		96875	
2	26.75625		31.19375		13.439281		00625	
3	88.76875		44.16250		97.844063		35625	
4	9.47500		11.51875		42.478813		55000	
••				, 1		7.7	55000	
 174	 15.85000) 1	 18.50000) 1	 51.056156	 7 4	58125	
175	19.50000		24.47500		33.054406		42500	
176	52.44375		39.57500		39.653938		47000	
177	60.58125		99.20625		52.761219		03125	
178	50.16875		35.20020 35.32500		72.974312		00625	
110	00.10076		30.02000	, 0	72.074012	2.0	00020	
	Hepatitis_B	Measles	BMI	Polio	Diphtheria	Incidents_HI	V \	
0	64.5625		. 46250	55.3750	55.1250	-		
1	98.0000		. 85625	98.1250	98.0625		5	
2	88.3125		.86875	91.7500	91.8750			
3	68.8125	64.0000 22	.51875	35.7500	55.5625	1.30375	0	
4	98.2500	75.4375 25	.85000	96.9375	98.3125	0.12500	0	
	•••				•••	•••		
174	72.4375	83.0000 26	. 49375	79.1875	75.2500	0.40000	0	
175	87.4375	65.0000 20	.76250	94.9375	91.7500	0.19687	5	
176	60.1875	95.0000 23	.02500	71.6250	72.6250	0.02500	0	
177	82.8750	39.1875 22	.00000	82.9375	83.8125	6.86812	5	
178	79.5625	64.0000 23	.54375	79.5625	79.1250	8.00625	0	
	GDP_per_capit	_	on_mln	Thinness	_ten_ninete	en_years \		
0	408.562		450625			16.58125		
1	3071.125	50 2.9	969375			1.61875		
2	3745.125		320625			6.09375		
3	2647.812		323750			6.19375		
4	14678.750	0.0	085000			3.42500		
• •	•••		•••			•••		
174	9294.875		392500			1.65000		
175	1807.875		032500			14.92500		
176	2406.812		730625			13.83125		
177	1059.875		362500			6.88125		
178	1290.625	50 12.5	538750			7.01250		
	TTI C :		0 -1 -7	P		T : £ -		
0	Thinness_five	•	School	_	nomy_status	_	•	
0		15.58125	2.90		1.0			
1		1.70000	9.24		1.0			
2 3		5.97500	6.99		1.0			
3		6.66875	4.60	/UZ3	1.0	52.82	500	

4	3.37500	9.01875	1.0	75.35000
• •	***	•••	•••	•••
174	1.56250	8.23750	1.0	72.79375
175	15.62500	6.90000	1.0	74.33125
176	13.75000	2.22500	1.0	64.16250
177	6.76250	6.43750	1.0	52.33125
178	6.98750	7.21250	1.0	48.66250

[179 rows x 20 columns]

Г177 -	df	.describe	()
$1 \pm l$ 1	U.I.	· rescribe	` '

[17]:		Year	Infant_deaths	s Under_fiv	re_deaths	Adult_mortalit	;y \	
	count	179.0	179.000000	_	79.000000	179.00000	•	
	mean	2007.5	30.363792	2	12.938268	192.25177	' 5	
	std	0.0	26.72548	5 4	12.916952	111.65904	14	
	min	2007.5	2.381250)	3.000000	57.71031	.3	
	25%	2007.5	8.15937	5	9.775000	107.04690)6	
	50%	2007.5	19.368750		23.137500	164.43240)6	
	75%	2007.5	48.95937	5	88.321875	247.52392	22	
	max	2007.5	115.718750	17	78.725000	572.97431	.2	
		^]h_]		II) Mana	la- DMI	Delde	`
	count	ATCOUOT_	consumption 179.000000	Hepatitis_I 179.000000				\
	count		4.820882	84.292598				
	mean std		3.914554	13.820223				
	min		0.000025	30.687500				
	25%		1.317813	78.218750				
	50%		4.209375	88.000000				
	75%		7.843438	94.375000				
	max		15.100000	98.875000				
	man		10.100000	20.07000	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	000 01.007000	, , , , , , , , , , , , , , , , , , , ,	
		Diphther	ia Incidents	s_HIV GDP_1	er_capita	Population_ml	n \	
	count	179.0000	00 179.00	00000	79.000000			
	mean	86.2716	48 0.89	94288 119	40.924930	36.67591	15	
	std	13.9315	32 2.3	11895 168	393.054182	136.65528	36	
	min	31.3125			263.937500	0.08500	00	
	25%	80.8125			109.906250	2.10812		
	50%	92.0625			102.625000	7.66062		
	75%	95.7812			37.781250	22.74531		
	max	99.0000	00 18.16	64375 1029	72.687500	1321.23937	75	
		Thinness	_ten_nineteen	n vears Thi	nness fiv	e_nine_years	Schooling \	
	count			.000000	·		79.000000	
	mean			.865852		4.899825	7.632123	
	std			.111094		4.195663	3.126912	
	min		0	. 100000		0.100000	1.337500	

```
25%
                                  1.756250
                                                               1.731250
                                                                            4.946875
      50%
                                  3.556250
                                                               3.718750
                                                                            7.831250
      75%
                                  7.165625
                                                               7.056250
                                                                           10.365625
                                 27.100000
      max
                                                              27.943750
                                                                           13.268750
             Economy_status
                               Life_expectancy
                  179.000000
                                     179.000000
      count
      mean
                    0.793296
                                      68.856075
      std
                    0.406077
                                       9.197699
      min
                    0.00000
                                      45.606250
      25%
                                      62.303125
                    1.000000
      50%
                    1.000000
                                      71.506250
      75%
                    1.000000
                                      74.937500
                                      82.456250
      max
                    1.000000
Γ197:
     df.describe(include='all')
[19]:
                             Region
                                                               Under_five_deaths
                   Country
                                        Year
                                              Infant_deaths
      count
                       179
                                179
                                       179.0
                                                  179.000000
                                                                      179.000000
                       179
                                  9
                                         NaN
                                                         NaN
      unique
                                                                              NaN
                             Africa
      top
               Afghanistan
                                         NaN
                                                         NaN
                                                                              NaN
                          1
                                 51
                                         NaN
                                                         NaN
                                                                              NaN
      freq
                                      2007.5
      mean
                       NaN
                                NaN
                                                   30.363792
                                                                       42.938268
      std
                       NaN
                                NaN
                                         0.0
                                                   26.725485
                                                                       42.916952
                       NaN
                                NaN
                                     2007.5
      min
                                                    2.381250
                                                                        3.000000
      25%
                       NaN
                                NaN
                                      2007.5
                                                    8.159375
                                                                         9.775000
      50%
                       NaN
                                NaN
                                      2007.5
                                                   19.368750
                                                                       23.137500
      75%
                       NaN
                                NaN
                                      2007.5
                                                   48.959375
                                                                       68.321875
      max
                       NaN
                                NaN
                                     2007.5
                                                  115.718750
                                                                      178.725000
               Adult mortality
                                 Alcohol consumption
                                                        Hepatitis B
                                                                         Measles
                    179.000000
                                           179.000000
                                                         179.000000
      count
                                                                      179.000000
                                                   NaN
                                                                 NaN
      unique
                            NaN
                                                                              NaN
      top
                            NaN
                                                   NaN
                                                                 NaN
                                                                              NaN
      freq
                            NaN
                                                   NaN
                                                                 NaN
                                                                              NaN
                                             4.820882
                                                          84.292598
      mean
                    192.251775
                                                                       77.344972
      std
                    111.659044
                                             3.914554
                                                          13.820223
                                                                       17.315208
                                             0.000025
      min
                     57.710313
                                                          30.687500
                                                                       16.250000
      25%
                                                          78.218750
                                                                       64.000000
                    107.046906
                                             1.317813
      50%
                    164.432406
                                             4.209375
                                                          88.000000
                                                                       83.000000
      75%
                    247.523922
                                             7.843438
                                                          94.375000
                                                                       92.250000
      max
                    572.974312
                                            15.100000
                                                          98.875000
                                                                       99.000000
                      BMI
                                 Polio
                                         Diphtheria
                                                      Incidents HIV
                                                                      GDP_per_capita
                            179.000000
                                         179.000000
                                                         179.000000
                                                                           179.000000
      count
               179.000000
                                   NaN
      unique
                      NaN
                                                NaN
                                                                 NaN
                                                                                  NaN
                                   NaN
                                                NaN
      top
                      NaN
                                                                 NaN
                                                                                  NaN
```

freq	NaN	NaN	NaN	NaN	NaN	
mean	25.032926	86.499651	86.271648	0.894288	11540.924930	
std	2.165490	13.581153	13.931532	2.311895	16893.054182	
min	20.212500	35.750000	31.312500	0.010000	263.937500	
25%	23.225000	80.531250	80.812500	0.080000	1409.906250	
50%	25.650000	92.375000	92.062500	0.164375	4402.625000	
75%	26.425000	96.062500	95.781250	0.516250	12037.781250	
max	31.687500	98.937500	99.000000	18.164375	102972.687500	
	Population_m	nln Thinness_	ten_nineteen_	_years Thinn	ess_five_nine_years	\
count	179.0000	000	179.0	00000	179.000000	
unique	N	IaN		NaN	NaN	
top	N	IaN		NaN	NaN	
freq	N	IaN		NaN	NaN	
mean	36.6759	915	4.8	365852	4.899825	
std	136.6552	286	4.1	111094	4.195663	
min	0.0850	000	0.1	100000	0.100000	
25%	2.1081	.25	1.7	756250	1.731250	
50%	7.6606	325	3.5	556250	3.718750	
75%	22.7453	313	7.1	165625	7.056250	
max	1321.2393	375	27.2	100000	27.943750	
	Schooling	Economy_statu	s Life_expe	ctancy		
count	179.000000	179.00000	_	000000		
unique	NaN	Nal	N	NaN		
top	NaN	Nal	N	NaN		
freq	NaN	Nal	N	NaN		
mean	7.632123	0.79329	6 68.8	356075		
std	3.126912	0.40607	7 9.1	197699		
min	1.337500	0.00000	0 45.6	306250		
25%	4.946875	1.00000	0 62.3	303125		
50%	7.831250	1.00000	0 71.5	506250		
75%	10.365625	1.00000	0 74.9	937500		
max	13.268750	1.00000	0 82.4	156250		
df.deso	cribe(include=	-'object')				
	Country	Region				
count	179	179				
unique	179	9				
top	Afghanistan	Africa				
freq	1	51				

#	Column	Non-Null Count	Dtype
	County	170 non null	
0	Country	179 non-null	object
1	Region	179 non-null	object
2	Year	179 non-null	float64
3	Infant_deaths	179 non-null	float64
4	Under_five_deaths	179 non-null	float64
5	Adult_mortality	179 non-null	float64
6	Alcohol_consumption	179 non-null	float64
7	Hepatitis_B	179 non-null	float64
8	Measles	179 non-null	float64
9	BMI	179 non-null	float64
10	Polio	179 non-null	float64
11	Diphtheria	179 non-null	float64
12	Incidents_HIV	179 non-null	float64
13	GDP_per_capita	179 non-null	float64
14	Population_mln	179 non-null	float64
15	Thinness_ten_nineteen_years	179 non-null	float64
16	Thinness_five_nine_years	179 non-null	float64
17	Schooling	179 non-null	float64
18	Economy_status	179 non-null	float64
19	Life_expectancy	179 non-null	float64
4+++	og. $flos+64(10)$ object(2)		

dtypes: float64(18), object(2)
memory usage: 28.1+ KB

[25]: df.head()

[25]:			Countr	у			Region	Year	Infant_dea	aths	\
	0		Afghanista	n			Āsia	2007.5	71.08	3125	
	1		Albani	a		Rest	of Europe	2007.5	15.25	625	
	2		Algeri	a			Africa	2007.5	26.75	625	
	3		Angol	a			Africa	2007.5	88.76	8875	
	4	Antigua	and Barbud	a Centra	l Americ	a and	Caribbean	2007.5	9.47	7500	
		Under_fi	ve_deaths	Adult_mo	rtality	Alcol	nol_consump	tion He	epatitis_B	\	
	0		98.61250	265	.804969		0.01	6125	64.5625		
	1		17.14375	83	.132969		4.69	6875	98.0000		
	2		31.19375	113	.439281		0.40	0625	88.3125		
	3		144.16250	297	.844063		4.93	5625	68.8125		
	4		11.51875	142	.478813		7.75	5000	98.2500		
		Measles	BMI	Polio	Diphthe	ria I	${ t Incidents_H}$	IV GDP_	_per_capita	\	
	0	24.3750	22.46250	55.3750	55.1	250	0.0225	00	408.5625		
	1	95.9375	25.85625	98.1250	98.0	625	0.0256	25	3071.1250		
	2	93.2500	24.86875	91.7500	91.8	750	0.0218	75	3745.1250		
	3	64.0000	22.51875	35.7500	55.5	625	1.3037	50	2647.8125		
	4	75.4375	25.85000	96.9375	98.3	125	0.1250	00	14678.7500		

```
0
              27.450625
                                              16.58125
                                                                         15.58125
                                                                          1.70000
      1
               2.969375
                                               1.61875
      2
              34.820625
                                               6.09375
                                                                          5.97500
      3
              21.623750
                                               6.19375
                                                                          6.66875
      4
               0.085000
                                               3.42500
                                                                          3.37500
         Schooling
                    Economy_status
                                    Life expectancy
      0
           2.90000
                                1.0
                                             59.65625
      1
           9.24375
                                1.0
                                             75.95000
      2
           6.99375
                                1.0
                                             73.78750
      3
           4.60625
                                1.0
                                             52.82500
           9.01875
                                1.0
                                             75.35000
[27]: df.columns
[27]: Index(['Country', 'Region', 'Year', 'Infant_deaths', 'Under_five_deaths',
              'Adult_mortality', 'Alcohol_consumption', 'Hepatitis_B', 'Measles',
             'BMI', 'Polio', 'Diphtheria', 'Incidents_HIV', 'GDP_per_capita',
             'Population_mln', 'Thinness_ten_nineteen_years',
             'Thinness_five_nine_years', 'Schooling', 'Economy_status',
             'Life_expectancy'],
            dtype='object')
[29]: #view first 5 columns
      columns=df.iloc[0:5]
      columns
[29]:
                      Country
                                                                        Infant deaths
                                                       Region
                                                                  Year
                 Afghanistan
                                                         Asia
                                                                             71.08125
      0
                                                               2007.5
      1
                      Albania
                                               Rest of Europe
                                                               2007.5
                                                                             15.25625
      2
                      Algeria
                                                       Africa
                                                               2007.5
                                                                             26.75625
      3
                       Angola
                                                       Africa
                                                               2007.5
                                                                             88.76875
         Antigua and Barbuda Central America and Caribbean
                                                               2007.5
                                                                              9.47500
         Under_five_deaths
                                              Alcohol_consumption Hepatitis_B
                            {\tt Adult\_mortality}
      0
                  98.61250
                                  265.804969
                                                          0.016125
                                                                         64.5625
                  17.14375
      1
                                   83.132969
                                                          4.696875
                                                                         98,0000
      2
                  31.19375
                                  113.439281
                                                          0.400625
                                                                         88.3125
      3
                 144.16250
                                  297.844063
                                                          4.935625
                                                                         68.8125
                  11.51875
                                  142.478813
                                                          7.755000
                                                                         98.2500
         Measles
                       BMI
                                                   Incidents_HIV
                                                                  GDP_per_capita
                               Polio
                                      Diphtheria
      0 24.3750 22.46250
                                          55.1250
                                                        0.022500
                                                                         408.5625
                             55.3750
      1 95.9375
                  25.85625
                             98.1250
                                         98.0625
                                                        0.025625
                                                                        3071.1250
      2 93.2500 24.86875
                             91.7500
                                         91.8750
                                                        0.021875
                                                                        3745.1250
```

Thinness_ten_nineteen_years

Population mln

Thinness five nine years

```
3 64.0000 22.51875 35.7500
                                         55.5625
                                                       1.303750
                                                                       2647.8125
      4 75.4375 25.85000 96.9375
                                                                      14678.7500
                                         98.3125
                                                       0.125000
         Population_mln Thinness_ten_nineteen_years
                                                       Thinness_five_nine_years
      0
              27.450625
                                             16.58125
                                                                        15.58125
      1
               2.969375
                                              1.61875
                                                                         1.70000
                                              6.09375
      2
              34.820625
                                                                         5.97500
      3
              21.623750
                                              6.19375
                                                                         6.66875
               0.085000
                                              3.42500
                                                                         3.37500
         Schooling Economy_status Life_expectancy
      0
           2.90000
                                1.0
                                            59.65625
      1
           9.24375
                                1.0
                                            75.95000
      2
           6.99375
                                1.0
                                            73.78750
      3
           4.60625
                                1.0
                                            52.82500
      4
           9.01875
                                1.0
                                            75.35000
[31]: df.isnull()
[31]:
                                                   Under_five_deaths
           Country
                    Region
                             Year
                                    Infant_deaths
             False
                     False
                           False
                                            False
                                                                False
      0
      1
             False
                     False False
                                                                False
                                            False
      2
             False
                     False False
                                            False
                                                                False
      3
             False
                     False False
                                            False
                                                                False
             False
                     False False
      4
                                            False
                                                                False
      . .
      174
             False
                     False False
                                            False
                                                               False
      175
             False
                     False False
                                            False
                                                               False
      176
             False
                     False False
                                            False
                                                               False
                                            False
             False
                     False False
      177
                                                                False
      178
             False
                     False False
                                            False
                                                                False
           Adult_mortality
                            Alcohol_consumption Hepatitis_B Measles
                                                                           BMI
                                                                                Polio
      0
                     False
                                           False
                                                        False
                                                                  False False False
                     False
                                           False
                                                                  False False
      1
                                                        False
                                                                                False
      2
                     False
                                           False
                                                        False
                                                                 False False False
      3
                     False
                                           False
                                                        False
                                                                  False False False
      4
                     False
                                                                  False False False
                                           False
                                                        False
      . .
      174
                     False
                                           False
                                                        False
                                                                  False False False
      175
                     False
                                           False
                                                        False
                                                                  False False False
      176
                     False
                                           False
                                                        False
                                                                 False False False
                                                                 False False False
      177
                     False
                                           False
                                                        False
      178
                     False
                                           False
                                                        False
                                                                 False False False
           Diphtheria Incidents_HIV GDP_per_capita Population_mln \
                False
                               False
      0
                                                False
                                                                 False
```

```
1
                 False
                                 False
                                                   False
                                                                    False
      2
                 False
                                 False
                                                   False
                                                                    False
      3
                 False
                                 False
                                                   False
                                                                    False
      4
                 False
                                 False
                                                   False
                                                                    False
                   •••
                                 False
      174
                 False
                                                  False
                                                                    False
      175
                 False
                                 False
                                                  False
                                                                    False
                                                                    False
      176
                 False
                                 False
                                                  False
      177
                 False
                                 False
                                                                    False
                                                   False
      178
                 False
                                 False
                                                   False
                                                                    False
           Thinness_ten_nineteen_years
                                           Thinness_five_nine_years
                                                                       Schooling \
      0
                                   False
                                                               False
                                                                           False
      1
                                   False
                                                               False
                                                                           False
      2
                                   False
                                                               False
                                                                           False
      3
                                   False
                                                               False
                                                                           False
      4
                                                                           False
                                   False
                                                               False
                                     •••
      . .
      174
                                   False
                                                               False
                                                                           False
      175
                                   False
                                                               False
                                                                           False
      176
                                   False
                                                               False
                                                                           False
      177
                                   False
                                                               False
                                                                           False
      178
                                   False
                                                               False
                                                                           False
           Economy_status Life_expectancy
      0
                     False
                                        False
      1
                     False
                                        False
      2
                     False
                                        False
      3
                     False
                                        False
      4
                     False
                                        False
      . .
      174
                                        False
                     False
      175
                     False
                                        False
      176
                     False
                                        False
      177
                     False
                                        False
      178
                     False
                                        False
      [179 rows x 20 columns]
[33]: df.isnull().sum()
[33]: Country
                                        0
      Region
                                        0
      Year
                                        0
      Infant_deaths
                                        0
      Under five deaths
                                        0
      Adult_mortality
                                        0
```

```
Hepatitis_B
                                      0
      Measles
                                      0
      BMI
                                      0
      Polio
                                      0
      Diphtheria
                                      0
      Incidents HIV
                                      0
      GDP_per_capita
                                      0
      Population mln
                                      0
      Thinness_ten_nineteen_years
                                      0
      Thinness five nine years
                                      0
      Schooling
                                      0
      Economy_status
                                      0
                                      0
      Life_expectancy
      dtype: int64
[35]: #Clean the Data
      df.dropna(inplace=True)
[37]: df.shape
[37]: (179, 20)
[39]: # previewing dataset
      df.sample(5)
[39]:
                 Country
                                  Region
                                             Year
                                                   Infant_deaths
                                                                  Under_five_deaths
      146
                 Somalia
                                  Africa 2007.5
                                                        98.25625
                                                                           161.26875
      68
           Guinea-Bissau
                                  Africa 2007.5
                                                                           130.56875
                                                        81.41875
      18
                  Bhutan
                                     Asia 2007.5
                                                        40.34375
                                                                            51.53750
      116
             New Zealand
                                 Oceania 2007.5
                                                         5.30000
                                                                             6.38750
      62
                 Germany European Union
                                          2007.5
                                                         3.73125
                                                                             4.51875
           Adult_mortality Alcohol_consumption Hepatitis_B Measles
                                                                              BMI
      146
                333.185125
                                        0.000025
                                                      42.0000
                                                               64.0000 22.62500
      68
                291.873906
                                        3.105625
                                                      84.0000 64.0000
                                                                        22.79375
      18
                                                      94.1250 82.0625
                243.186219
                                        0.481875
                                                                         23.02500
      116
                 74.433875
                                        9.145000
                                                      90.4375
                                                               86.0000
                                                                        27.39375
      62
                                                      87.5625 89.3125
                                                                        26.18750
                 81.360344
                                       11.647500
             Polio
                    Diphtheria
                                Incidents HIV
                                                GDP_per_capita Population_mln \
      146 40.5000
                       37.7500
                                      0.130000
                                                      263.9375
                                                                      11.271250
           74.1875
      68
                       73.1250
                                      2.608125
                                                      576.5000
                                                                       1.443125
           94.4375
      18
                       93.8750
                                      0.181250
                                                     1882.6250
                                                                       0.665000
      116 89.1250
                       90.8750
                                      0.031875
                                                    35167.5000
                                                                       4.225625
                                      0.061250
      62
           94.5625
                       94.9375
                                                    37390.8125
                                                                     81.814375
```

0

Alcohol_consumption

```
Thinness_ten_nineteen_years
                                        Thinness_five_nine_years
                                                                    Schooling \
      146
                                7.26875
                                                           7.08125
                                                                      2.10000
      68
                                7.50000
                                                           7.38125
                                                                      2.50000
      18
                               17.21875
                                                          17.92500
                                                                      2.44375
      116
                                0.31250
                                                           0.30000
                                                                     11.85625
      62
                                1.11875
                                                           1.10625
                                                                     13.26875
           Economy_status Life_expectancy
      146
                      1.0
                                   53.24375
      68
                      1.0
                                   53.52500
                      1.0
      18
                                   66.45625
      116
                      0.0
                                   80.18750
      62
                      0.0
                                   79.47500
[41]: df.dtypes
[41]: Country
                                       object
      Region
                                       object
      Year
                                      float64
      Infant_deaths
                                      float64
      Under_five_deaths
                                      float64
      Adult_mortality
                                      float64
      Alcohol_consumption
                                      float64
      Hepatitis_B
                                      float64
      Measles
                                      float64
      BMI
                                      float64
      Polio
                                      float64
      Diphtheria
                                      float64
      Incidents_HIV
                                      float64
      GDP_per_capita
                                      float64
                                      float64
      Population mln
      Thinness_ten_nineteen_years
                                      float64
      Thinness_five_nine_years
                                      float64
      Schooling
                                      float64
      Economy_status
                                      float64
                                      float64
      Life_expectancy
      dtype: object
[43]: # view first row
      row=df.iloc[0]
      row
[43]: Country
                                      Afghanistan
      Region
                                             Asia
      Year
                                           2007.5
                                         71.08125
      Infant deaths
```

98.6125

Under_five_deaths

	Alco Hep Mea BMI Pol Inc GDF Pop Thi Sch Ecc	patitis_E asles Lio phtheria cidents_E per_cap oulation_ inness_te inness_fi nooling	Sumption SIV Pita mln en_ninetee ve_nine_y	•	265.80496 0.01612 64.562 24.37 22.462 55.37 55.12 0.022 408.562 27.45062 16.5812 15.5812 2.	5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5					
		fe_expect ne: 0. dt	ancy ype: obje	ct.	59.65625						
:		iew first w=df.iloc									
	rot		.[0.5]								
:			Count	•			Region		_		\
	0		Afghanist					2007.5	71.0		
	1	2 Algeria					Europe 2007.5 Africa 2007.5		26.75625		
	2										
	3		Ango					2007.5			
	4	4 Antigua and Barbuda Cent			cral America and Caribb			2007.5	9.47500		
		Under fi	.ve_deaths	Adult mo	rtality Al	cohol	_consumpt	ion He	patitis_B	\	
	0	onder_ri	98.61250	-	.804969	COHOL	0.016		64.5625	`	
	1		17.14375		.132969		4.696		98.0000		
	2							625	88.3125		
	3					.844063 4.9			68.8125		
	4							5000	98.2500		
		Measles	BMI	Polio	Diphtheria	Inc	idents_H]	V GDP_	per_capita	\	
	0	24.3750	22.46250	55.3750	55.1250)	0.02250	00	408.5625		
	1	95.9375	25.85625	98.1250	98.0625		0.02562	25	3071.1250		
		93.2500	24.86875		91.8750)	0.02187		3745.1250		
	3	64.0000	22.51875	35.7500	55.5625	•	1.30375	50	2647.8125		
	4	75.4375	25.85000	96.9375	98.3125	i	0.12500	00	14678.7500		
	Population_mln Thinness_ten_nineteen_years Thinness_five_nine_years									`	
	0	-	.on_min i 450625	nimess_re		Thinness_five_nine_years 15.58125			\		
					16.58125			1.70000			
	1				1.61875						
	2	34.		6.09375			5.97500				

[45]

[45]

21.623750

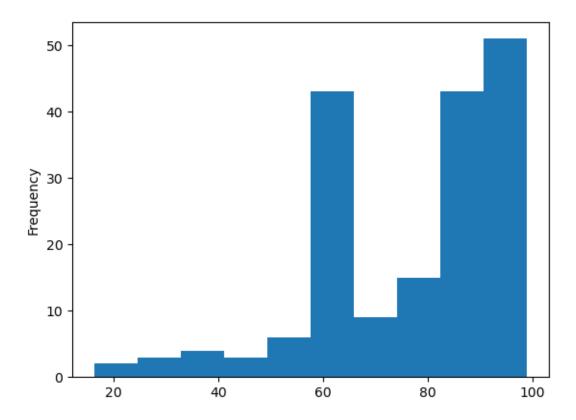
3

6.19375

6.66875

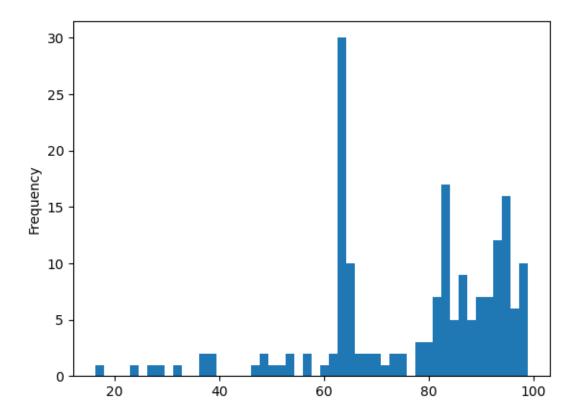
```
4
              0.085000
                                            3.42500
                                                                      3.37500
        Schooling Economy_status Life_expectancy
     0
          2.90000
                              1.0
                                          59.65625
          9.24375
                              1.0
     1
                                          75.95000
     2
          6.99375
                              1.0
                                          73.78750
     3
          4.60625
                              1.0
                                          52.82500
     4
          9.01875
                              1.0
                                          75.35000
[47]: df['Measles'].value_counts()
[47]: Measles
     64.0000
                30
     83.0000
                12
     65.0000
                10
     86.0000
                 5
     98.1875
                 2
     93.3750
                 1
     88.0000
                 1
     83.0625
                 1
     88.9375
                 1
                 1
     39.1875
     Name: count, Length: 115, dtype: int64
[49]: df['Measles'].unique()
[49]: array([24.375, 95.9375, 93.25, 64. , 75.4375, 84.6875, 94.6875,
            87.25 , 60.9375, 79.5625, 83. , 98.1875, 66.5625, 84.5625,
            97.75 , 80.9375, 90.9375, 82.0625, 89.1875, 70.
                                                             , 94.75 ,
            90.4375, 31.5 , 57.375 , 94.3125, 49.75 , 89.625 , 93.875 ,
            79.25 , 86.5 , 97.6875, 88.0625, 98.0625, 87.125 , 82.
            88.9375, 83.0625, 88. , 94.125 , 93.375 , 89.8125, 92.
            67.625 , 75.75 , 89.3125 , 56.25 , 78.5 , 79.4375 , 82.6875 ,
                 , 92.3125, 38.8125, 47.75 , 65. , 62.0625, 86.
            94.1875, 83.4375, 82.3125, 88.8125, 92.75 , 98.25 , 28.
                   , 90.75 , 94.25 , 52.5 , 70.4375, 93.4375, 81.5625,
            72.75 , 84.1875, 92.8125, 95.625 , 95.6875, 68.9375, 94.
                 , 91.9375, 36.625 , 83.1875, 66. , 53.5625, 27.6875,
                           , 94.4375, 92.875 , 95.5 , 87.
            95.4375, 85.
            71.3125, 97.25 , 36.25 , 88.5625, 98.5625, 60.
                                                              , 94.8125,
            53.625 , 92.1875, 93.0625, 16.25 , 78.0625, 73.1875, 90.375 ,
            92.625 , 97.625 , 81.4375 , 97.8125 , 96.1875 , 78.9375 , 92.5625 ,
            83.5625, 95. , 39.1875])
[54]: Measles=df['Measles']
```

```
[56]: df['Measles'].nunique()
[56]: 115
[58]: df['Measles'].unique()
[58]: array([24.375, 95.9375, 93.25, 64. , 75.4375, 84.6875, 94.6875,
            87.25 , 60.9375, 79.5625, 83. , 98.1875, 66.5625, 84.5625,
            97.75 , 80.9375, 90.9375, 82.0625, 89.1875, 70.
                                                                , 94.75 ,
            90.4375, 31.5 , 57.375 , 94.3125, 49.75 , 89.625 , 93.875 ,
                           , 97.6875, 88.0625, 98.0625, 87.125 , 82.
            79.25 , 86.5
            88.9375, 83.0625, 88.
                                    , 94.125 , 93.375 , 89.8125, 92.
            67.625 , 75.75 , 89.3125 , 56.25 , 78.5 , 79.4375 , 82.6875 ,
                    , 92.3125, 38.8125, 47.75 , 65.
                                                       , 62.0625, 86.
            94.1875, 83.4375, 82.3125, 88.8125, 92.75 , 98.25 , 28.
                    , 90.75 , 94.25 , 52.5 , 70.4375, 93.4375, 81.5625,
            47.
            72.75 , 84.1875, 92.8125, 95.625 , 95.6875, 68.9375, 94.
            97.
                    , 91.9375, 36.625 , 83.1875, 66.
                                                      , 53.5625, 27.6875,
                           , 94.4375, 92.875 , 95.5 , 87.
            95.4375, 85.
                                                                , 49.
            71.3125, 97.25 , 36.25 , 88.5625, 98.5625, 60.
                                                                 , 94.8125,
            53.625 , 92.1875 , 93.0625 , 16.25 , 78.0625 , 73.1875 , 90.375 ,
            92.625 , 97.625 , 81.4375, 97.8125, 96.1875, 78.9375, 92.5625,
            83.5625, 95.
                           , 39.1875])
[62]: df['Measles'].value_counts(normalize=True)
[62]: Measles
      64.0000
                0.167598
      83.0000
                0.067039
      65.0000
                0.055866
      86.0000
                0.027933
      98.1875
                0.011173
      93.3750
                0.005587
      88.0000
                0.005587
      83.0625
                0.005587
      88.9375
                0.005587
      39.1875
                0.005587
      Name: proportion, Length: 115, dtype: float64
[64]: df['Measles'].plot.hist()
[64]: <Axes: ylabel='Frequency'>
```



[66]: df['Measles'].plot.hist(bins=50)

[66]: <Axes: ylabel='Frequency'>



[184]:

```
AttributeError
                                            Traceback (most recent call last)
$$ \sim \Delta \mathbb Local\Temp\ipykernel_15340\4185571416.py in ?() $
----> 1 df.Year.skew()
~\anaconda3\Lib\site-packages\pandas\core\generic.py in ?(self, name)
   6295
                     and name not in self._accessors
   6296
                     and self._info_axis.

    can_hold_identifiers_and_holds_name(name)

   6297
   6298
                     return self[name]
                return object.__getattribute__(self, name)
-> 6299
AttributeError: 'DataFrame' object has no attribute 'Year'
```

[]: