

```
In [2]: import pandas as pd  
import numpy as np
```

```
In [5]: # create the data frame from the dataset  
  
df = pd.read_csv("D:/AVD/Python/Python Project/world_alcohol_comsumption.csv")  
pd.set_option('display.max_rows', None)  
df
```

Out[5]:

	Year	WHO region	Country	Beverage Types	Display Value
0	1986	Western Pacific	Viet Nam	Wine	0.00
1	1986	Americas	Uruguay	Other	0.50
2	1985	Africa	Cte d'Ivoire	Wine	1.62
3	1986	Americas	Colombia	Beer	4.27
4	1987	Americas	Saint Kitts and Nevis	Beer	1.98
5	1987	Americas	Guatemala	Other	0.00
6	1987	Africa	Mauritius	Wine	0.13
7	1985	Africa	Angola	Spirits	0.39
8	1986	Americas	Antigua and Barbuda	Spirits	1.55
9	1984	Africa	Nigeria	Other	6.10
10	1987	Africa	Botswana	Wine	0.20
11	1989	Americas	Guatemala	Beer	0.62
12	1985	Western Pacific	Lao People's Democratic Republic	Beer	0.00
13	1984	Eastern Mediterranean	Afghanistan	Other	0.00
14	1985	Western Pacific	Viet Nam	Spirits	0.05
15	1987	Africa	Guinea-Bissau	Wine	0.07
16	1984	Americas	Costa Rica	Wine	0.06
17	1989	Africa	Seychelles	Beer	2.23
18	1984	Europe	Norway	Spirits	1.62
19	1984	Africa	Kenya	Beer	1.08
20	1986	South-East Asia	Myanmar	Wine	0.00
21	1989	Americas	Costa Rica	Spirits	4.51
22	1984	Europe	Romania	Spirits	2.67
23	1984	Europe	Turkey	Beer	0.44
24	1985	Africa	Comoros	Other	NaN
25	1984	Eastern Mediterranean	Tunisia	Other	0.00
26	1985	Europe	United Kingdom of Great Britain and Northern I...	Wine	1.36
27	1984	Eastern Mediterranean	Bahrain	Beer	2.22
28	1987	Western Pacific	Viet Nam	Beer	0.11
29	1986	Europe	Italy	Other	NaN
30	1986	Africa	Sierra Leone	Other	4.48

Year	WHO region	Country	Beverage Types	Display Value
31 1986	Western Pacific	Micronesia (Federated States of)	Wine	0.00
32 1989	Africa	Mauritius	Beer	1.60
33 1985	Africa	Mauritania	Other	0.00
34 1986	Europe	Russian Federation	Wine	0.80
35 1985	Americas	Saint Kitts and Nevis	Spirits	2.24
36 1987	Eastern Mediterranean	Egypt	Beer	0.07
37 1986	Europe	Sweden	Beer	3.04
38 1987	Eastern Mediterranean	Qatar	Other	0.00
39 1987	Africa	Burkina Faso	Spirits	0.01
40 1987	Europe	Austria	Spirits	1.90
41 1986	Europe	Czech Republic	Beer	6.82
42 1984	Europe	Ukraine	Spirits	3.06
43 1984	Western Pacific	China	Wine	0.03
44 1985	Europe	Lithuania	Other	NaN
45 1989	Africa	Zimbabwe	Beer	0.19
46 1987	Americas	Trinidad and Tobago	Spirits	2.26
47 1986	Americas	Mexico	Other	0.04
48 1987	Americas	Nicaragua	Beer	0.70
49 1986	Europe	Malta	Wine	1.49
50 1985	Europe	Switzerland	Other	0.30
51 1987	Europe	Finland	Beer	3.88
52 1986	Eastern Mediterranean	Saudi Arabia	Wine	0.00
53 1984	Eastern Mediterranean	Kuwait	Beer	0.00
54 1984	Americas	El Salvador	Spirits	1.81
55 1989	Americas	Suriname	Wine	0.04
56 1987	Western Pacific	Viet Nam	Wine	0.00
57 1989	Europe	Croatia	Wine	5.10
58 1984	Eastern Mediterranean	Somalia	Spirits	0.00
59 1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00

Year	WHO region	Country	Beverage Types	Display Value
60 1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
61 1984	Western Pacific	Papua New Guinea	Spirits	0.08
62 1987	Americas	Suriname	Other	0.00
63 1985	Eastern Mediterranean	Libya	Other	0.00
64 1989	Americas	Bolivia (Plurinational State of)	Beer	1.26
65 1989	Eastern Mediterranean	Somalia	Beer	0.00
66 1987	Eastern Mediterranean	Iraq	Wine	0.01
67 1989	Africa	Namibia	Beer	0.00
68 1989	Africa	Uganda	Beer	0.12
69 1986	Africa	Togo	Spirits	0.42
70 1986	Africa	Madagascar	Spirits	1.02
71 1985	Africa	Mali	Other	0.57
72 1987	Africa	Mauritania	Other	0.00
73 1986	Eastern Mediterranean	Pakistan	Other	0.01
74 1986	Americas	Bolivia (Plurinational State of)	Spirits	2.06
75 1989	Eastern Mediterranean	Afghanistan	Other	0.00
76 1985	Africa	Comoros	Beer	0.02
77 1985	Africa	Cameroon	Spirits	0.01
78 1989	Americas	Jamaica	Other	0.00
79 1989	Europe	Finland	Other	2.09
80 1985	Africa	Malawi	Other	0.84
81 1985	Europe	Netherlands	Wine	2.54
82 1987	Europe	Ireland	Spirits	2.25
83 1986	Europe	Ukraine	Other	NaN
84 1986	South-East Asia	Sri Lanka	Other	0.00
85 1985	Africa	Democratic Republic of the Congo	Wine	0.01
86 1986	Americas	Bahamas	Wine	1.83
87 1989	Eastern Mediterranean	Iraq	Wine	0.01
88 1987	Eastern	Lebanon	Beer	0.42

Year	WHO region	Country	Beverage Types	Display Value
Mediterranean				
89 1986	Eastern Mediterranean	Lebanon	Wine	0.70
90 1989	Africa	Malawi	Wine	0.01
91 1989	Europe	Bulgaria	Beer	4.43
92 1986	Africa	Eritrea	Spirits	0.00
93 1987	Africa	Madagascar	Other	NaN
94 1985	Europe	Ukraine	Spirits	3.06
95 1984	Africa	Niger	Other	0.00
96 1985	Europe	Luxembourg	Wine	7.38
97 1984	South-East Asia	Indonesia	Wine	0.00
98 1984	Africa	Equatorial Guinea	Wine	0.00
99 1985	South-East Asia	Democratic People's Republic of Korea	Wine	0.00

In [8]: # Write a python program to find the alcohol consumption detail in the year 1987 or 1989  
res = df[(df['Year'] == 1987) | (df['Year'] == 1989)] # df[(df.Year == 1987) | (df.Year == 1989)]  
res

Out[8]:	Year	WHO region	Country	Beverage Types	Display Value
4	1987	Americas	Saint Kitts and Nevis	Beer	1.98
5	1987	Americas	Guatemala	Other	0.00
6	1987	Africa	Mauritius	Wine	0.13
10	1987	Africa	Botswana	Wine	0.20
11	1989	Americas	Guatemala	Beer	0.62
15	1987	Africa	Guinea-Bissau	Wine	0.07
17	1989	Africa	Seychelles	Beer	2.23
21	1989	Americas	Costa Rica	Spirits	4.51
28	1987	Western Pacific	Viet Nam	Beer	0.11
32	1989	Africa	Mauritius	Beer	1.60
36	1987	Eastern Mediterranean	Egypt	Beer	0.07
38	1987	Eastern Mediterranean	Qatar	Other	0.00
39	1987	Africa	Burkina Faso	Spirits	0.01
40	1987	Europe	Austria	Spirits	1.90
45	1989	Africa	Zimbabwe	Beer	0.19
46	1987	Americas	Trinidad and Tobago	Spirits	2.26
48	1987	Americas	Nicaragua	Beer	0.70
51	1987	Europe	Finland	Beer	3.88
55	1989	Americas	Suriname	Wine	0.04
56	1987	Western Pacific	Viet Nam	Wine	0.00
57	1989	Europe	Croatia	Wine	5.10
59	1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00
60	1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
62	1987	Americas	Suriname	Other	0.00
64	1989	Americas	Bolivia (Plurinational State of)	Beer	1.26
65	1989	Eastern Mediterranean	Somalia	Beer	0.00
66	1987	Eastern Mediterranean	Iraq	Wine	0.01
67	1989	Africa	Namibia	Beer	0.00
68	1989	Africa	Uganda	Beer	0.12
72	1987	Africa	Mauritania	Other	0.00
75	1989	Eastern Mediterranean	Afghanistan	Other	0.00
78	1989	Americas	Jamaica	Other	0.00
79	1989	Europe	Finland	Other	2.09
82	1987	Europe	Ireland	Spirits	2.25

Year	WHO region	Country	Beverage Types	Display Value
87	1989 Eastern Mediterranean	Iraq	Wine	0.01
88	1987 Eastern Mediterranean	Lebanon	Beer	0.42
90	1989 Africa	Malawi	Wine	0.01
91	1989 Europe	Bulgaria	Beer	4.43
93	1987 Africa	Madagascar	Other	NaN

In [19]:

```
# 2 Ans. -->
# find out and display horizontal bar chart the alcohol consumption details in the year
# WHO region is 'Western Pacific' and Country is 'Vietnam' from dataset

res = df[df['Year'] == 1987].where((df['WHO region'] == 'Western Pacific') & (df['Country'] == 'Vietnam'))
res = res.dropna()

res
```

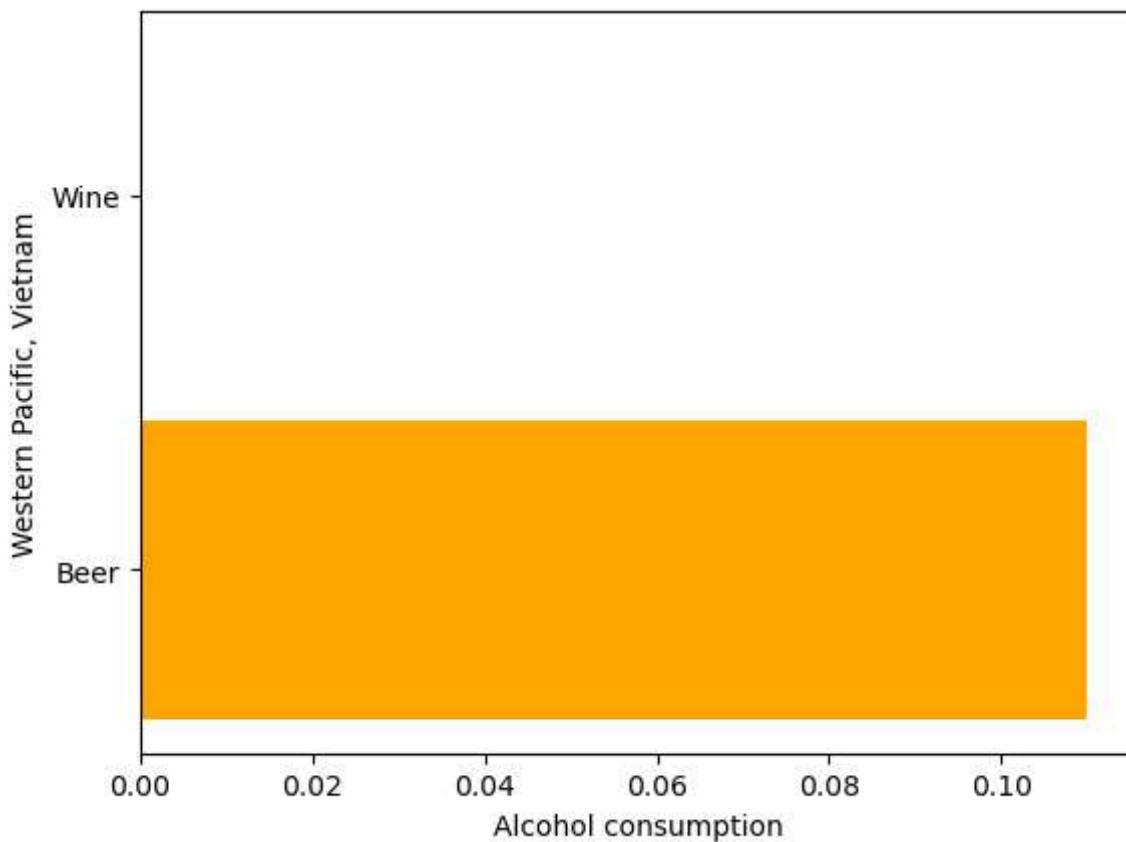
Out[19]:

Year	WHO region	Country	Beverage Types	Display Value
28	1987.0 Western Pacific	Viet Nam	Beer	0.11
56	1987.0 Western Pacific	Viet Nam	Wine	0.00

In [25]:

```
import matplotlib.pyplot as plt

plt.barh('Beverage Types', 'Display Value', data=res, label = '1987 Data', color = 'orange')
plt.xlabel('Alcohol consumption')
plt.ylabel('Western Pacific, Vietnam')
plt.show()
```



```
In [28]: # write a pandas program to find and display bar chart to out the alcohol consumption  
# where WHO region is 'Americas' and 'Europe'  
  
res = df[(df['Year'] == 1986) | (df['Year'] == 1989)].where(((df['WHO region'] == 'Ame  
res = res.dropna()  
res
```

Out[28]:

	Year	WHO region	Country	Beverage Types	Display Value
1	1986.0	Americas	Uruguay	Other	0.50
3	1986.0	Americas	Colombia	Beer	4.27
8	1986.0	Americas	Antigua and Barbuda	Spirits	1.55
11	1989.0	Americas	Guatemala	Beer	0.62
21	1989.0	Americas	Costa Rica	Spirits	4.51
34	1986.0	Europe	Russian Federation	Wine	0.80
37	1986.0	Europe	Sweden	Beer	3.04
41	1986.0	Europe	Czech Republic	Beer	6.82
47	1986.0	Americas	Mexico	Other	0.04
49	1986.0	Europe	Malta	Wine	1.49
55	1989.0	Americas	Suriname	Wine	0.04
57	1989.0	Europe	Croatia	Wine	5.10
64	1989.0	Americas	Bolivia (Plurinational State of)	Beer	1.26
74	1986.0	Americas	Bolivia (Plurinational State of)	Spirits	2.06
78	1989.0	Americas	Jamaica	Other	0.00
79	1989.0	Europe	Finland	Other	2.09
86	1986.0	Americas	Bahamas	Wine	1.83
91	1989.0	Europe	Bulgaria	Beer	4.43

In [31]:

```
res1 = res[res['Year'] == 1986]
res1
```

Out[31]:

	Year	WHO region	Country	Beverage Types	Display Value
1	1986.0	Americas	Uruguay	Other	0.50
3	1986.0	Americas	Colombia	Beer	4.27
8	1986.0	Americas	Antigua and Barbuda	Spirits	1.55
34	1986.0	Europe	Russian Federation	Wine	0.80
37	1986.0	Europe	Sweden	Beer	3.04
41	1986.0	Europe	Czech Republic	Beer	6.82
47	1986.0	Americas	Mexico	Other	0.04
49	1986.0	Europe	Malta	Wine	1.49
74	1986.0	Americas	Bolivia (Plurinational State of)	Spirits	2.06
86	1986.0	Americas	Bahamas	Wine	1.83

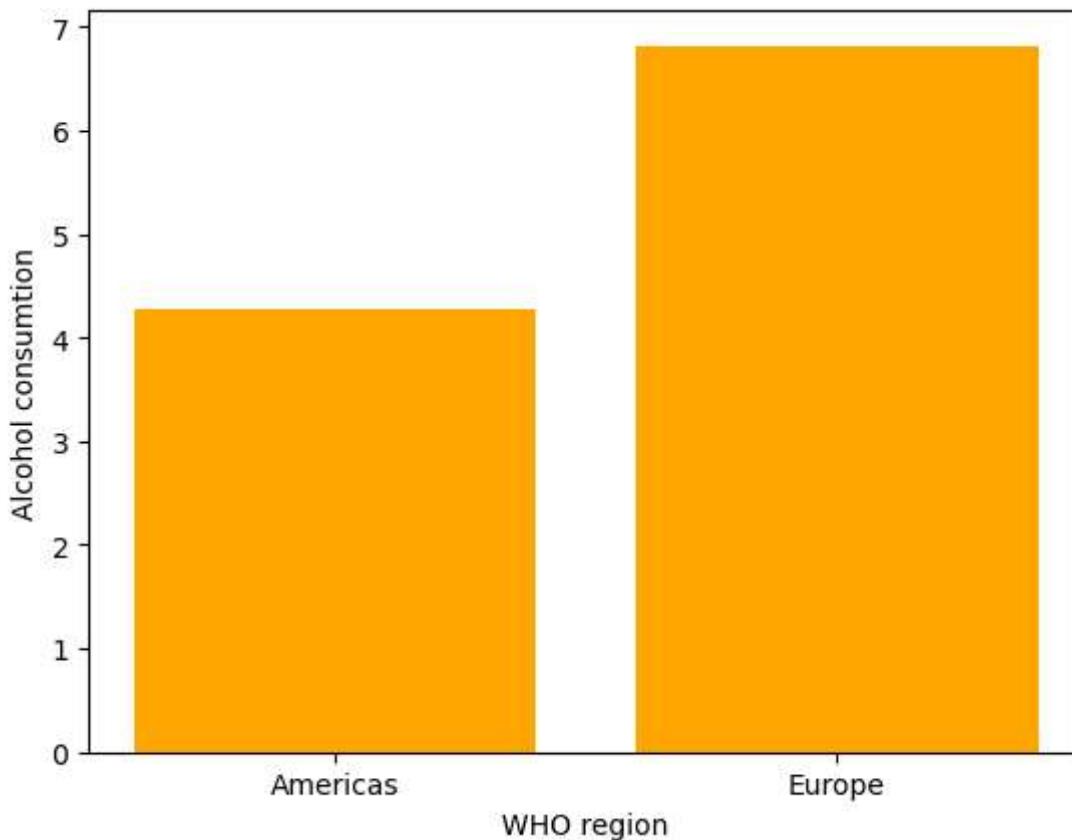
In [32]:

```
res2 = res[res['Year'] == 1989]
res2
```

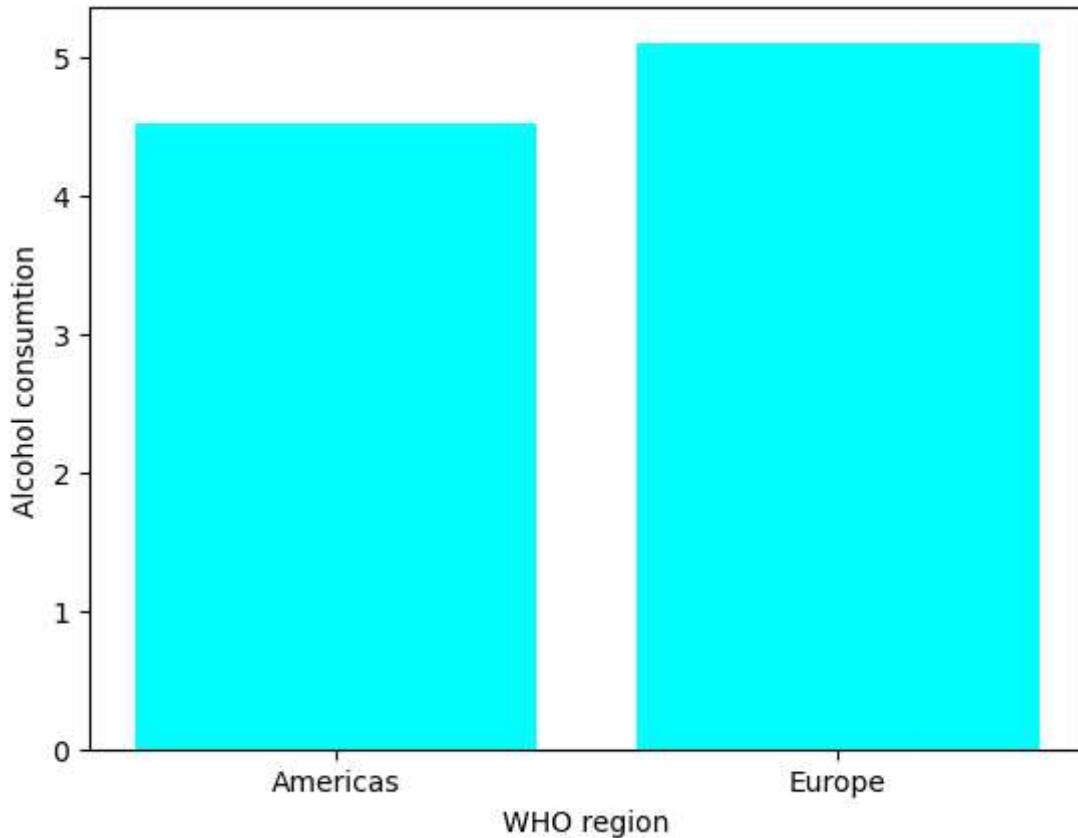
Out[32]:

	Year	WHO region	Country	Beverage Types	Display Value
11	1989.0	Americas	Guatemala	Beer	0.62
21	1989.0	Americas	Costa Rica	Spirits	4.51
55	1989.0	Americas	Suriname	Wine	0.04
57	1989.0	Europe	Croatia	Wine	5.10
64	1989.0	Americas	Bolivia (Plurinational State of)	Beer	1.26
78	1989.0	Americas	Jamaica	Other	0.00
79	1989.0	Europe	Finland	Other	2.09
91	1989.0	Europe	Bulgaria	Beer	4.43

```
In [38]: plt.bar('WHO region', 'Display Value', data=res1, label = '1986', color = 'orange')
plt.xlabel('WHO region')
plt.ylabel('Alcohol consumtion')
plt.show()
```



```
In [52]: plt.bar('WHO region', 'Display Value', data=res2, label = '1989', color = 'cyan')
plt.xlabel('WHO region')
plt.ylabel('Alcohol consumtion')
plt.show()
```



```
In [51]: # find out 'WHO region', 'Country', 'Beverage Types' in the year '1986' or '1989' where
res = df[(df['Year'] == 1986) | (df['Year'] == 1989)].where((df['WHO region'] == 'Americas') & (df['WHO region'] == 'Europe'))
[[ 'WHO region', 'Country', 'Beverage Types']]
```

```
res = res.dropna()
```

```
res
```

Out[51]:

	Year	WHO region	Country	Beverage Types	Display Value
1	1986.0	Americas	Uruguay	Other	0.50
3	1986.0	Americas	Colombia	Beer	4.27
8	1986.0	Americas	Antigua and Barbuda	Spirits	1.55
11	1989.0	Americas	Guatemala	Beer	0.62
21	1989.0	Americas	Costa Rica	Spirits	4.51
34	1986.0	Europe	Russian Federation	Wine	0.80
37	1986.0	Europe	Sweden	Beer	3.04
41	1986.0	Europe	Czech Republic	Beer	6.82
47	1986.0	Americas	Mexico	Other	0.04
49	1986.0	Europe	Malta	Wine	1.49
55	1989.0	Americas	Suriname	Wine	0.04
57	1989.0	Europe	Croatia	Wine	5.10
64	1989.0	Americas	Bolivia (Plurinational State of)	Beer	1.26
74	1986.0	Americas	Bolivia (Plurinational State of)	Spirits	2.06
78	1989.0	Americas	Jamaica	Other	0.00
79	1989.0	Europe	Finland	Other	2.09
86	1986.0	Americas	Bahamas	Wine	1.83
91	1989.0	Europe	Bulgaria	Beer	4.43

In [53]: # Find out the records where consumption of beverages per person average >= 5 and Beverage Type is Beer

```
df[(df['Display Value'] >= 5) & (df['Beverage Types'] == 'Beer')]
```

Out[53]:

	Year	WHO region	Country	Beverage Types	Display Value
41	1986	Europe	Czech Republic	Beer	6.82

In [68]: # find out and display pie chart of the records where consumption of beverage per person average >= 4 and Beverage type is Beer, Wine, Spirit

```
res1 = df[(df['Display Value'] >= 4) & (df['Beverage Types'] == 'Beer')]['Display Value']
res2 = df[(df['Display Value'] >= 4) & (df['Beverage Types'] == 'Wine')]['Display Value']
res3 = df[(df['Display Value'] >= 4) & (df['Beverage Types'] == 'Spirits')]['Display Value']
```

In [59]: res1

```
Out[59]: 3    4.27
41   6.82
91   4.43
Name: Display Value, dtype: float64
```

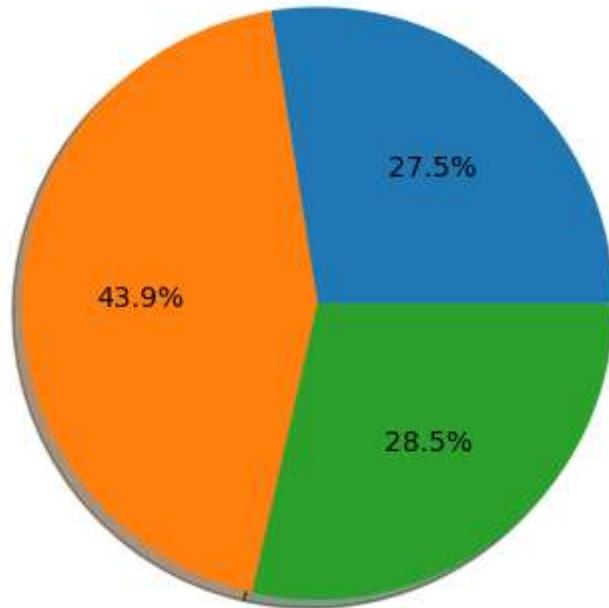
In [60]: res2

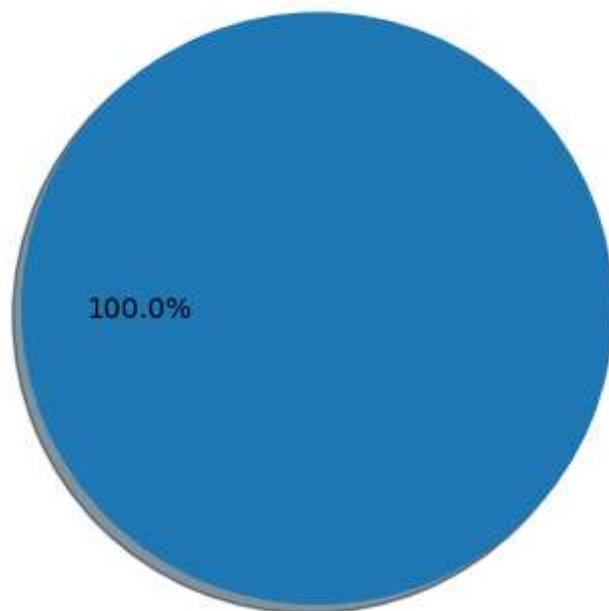
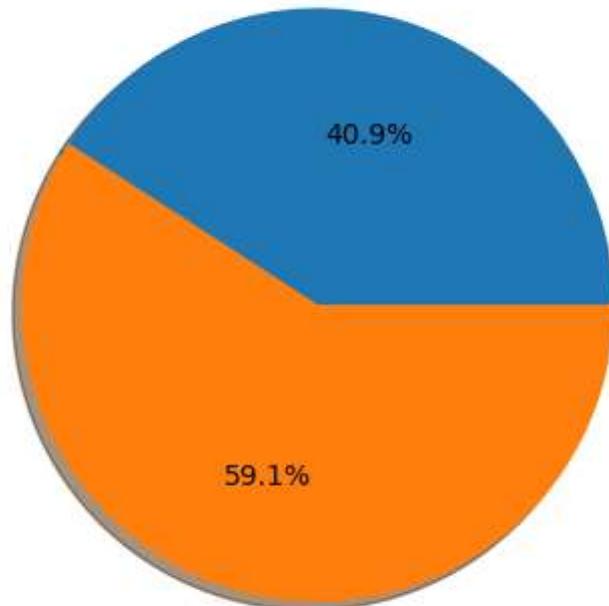
```
Out[60]: 57    5.10  
         96    7.38  
         Name: Display Value, dtype: float64
```

```
In [65]: res3
```

```
Out[65]: Series([], Name: Display Value, dtype: float64)
```

```
In [69]: plt.pie(res1, shadow=True, autopct = '%.1F%%')  
plt.show()  
plt.pie(res2, shadow=True, autopct = '%.1F%%')  
plt.show()  
plt.pie(res3, shadow=True, autopct = '%.1F%%')  
plt.show()
```





```
In [70]: # write a pandas program to filter the WHO region and Beverage Types columns and record  
df.loc[0:15, ['WHO region', 'Beverage Types']]
```

Out[70]:

	WHO region	Beverage Types
0	Western Pacific	Wine
1	Americas	Other
2	Africa	Wine
3	Americas	Beer
4	Americas	Beer
5	Americas	Other
6	Africa	Wine
7	Africa	Spirits
8	Americas	Spirits
9	Africa	Other
10	Africa	Wine
11	Americas	Beer
12	Western Pacific	Beer
13	Eastern Mediterranean	Other
14	Western Pacific	Spirits
15	Africa	Wine

In [77]:

```
# write a pandas program to filter WHO region contains 'Ea' substring and show count of rows

res = df['WHO region']
res = df[res.str.contains('Ea')]

res
```

Out[77]:

	Year	WHO region	Country	Beverage Types	Display Value
13	1984	Eastern Mediterranean	Afghanistan	Other	0.00
20	1986	South-East Asia	Myanmar	Wine	0.00
25	1984	Eastern Mediterranean	Tunisia	Other	0.00
27	1984	Eastern Mediterranean	Bahrain	Beer	2.22
36	1987	Eastern Mediterranean	Egypt	Beer	0.07
38	1987	Eastern Mediterranean	Qatar	Other	0.00
52	1986	Eastern Mediterranean	Saudi Arabia	Wine	0.00
53	1984	Eastern Mediterranean	Kuwait	Beer	0.00
58	1984	Eastern Mediterranean	Somalia	Spirits	0.00
59	1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00
60	1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
63	1985	Eastern Mediterranean	Libya	Other	0.00
65	1989	Eastern Mediterranean	Somalia	Beer	0.00
66	1987	Eastern Mediterranean	Iraq	Wine	0.01
73	1986	Eastern Mediterranean	Pakistan	Other	0.01
75	1989	Eastern Mediterranean	Afghanistan	Other	0.00
84	1986	South-East Asia	Sri Lanka	Other	0.00
87	1989	Eastern Mediterranean	Iraq	Wine	0.01
88	1987	Eastern Mediterranean	Lebanon	Beer	0.42
89	1986	Eastern Mediterranean	Lebanon	Wine	0.70
97	1984	South-East Asia	Indonesia	Wine	0.00
99	1985	South-East Asia	Democratic People's Republic of Korea	Wine	0.00

In [78]:

```
# show count of it

res = len(res)
res
```

Out[78]:

22

In [83]:

```
# write a pandas program to filter those records where WHO region matches with multiple regions
# (Africa, Eastern Mediterranean, Europe)

df1 = df.rename(columns = {'WHO region' : 'WHO_region'})
df1.query('WHO_region in ["Africa", "Eastern Mediterranean", "Europe"]')
```

Out[83]:

	Year	WHO_region	Country	Beverage Types	Display Value
2	1985	Africa	Cte d'Ivoire	Wine	1.62
6	1987	Africa	Mauritius	Wine	0.13
7	1985	Africa	Angola	Spirits	0.39
9	1984	Africa	Nigeria	Other	6.10
10	1987	Africa	Botswana	Wine	0.20
13	1984	Eastern Mediterranean	Afghanistan	Other	0.00
15	1987	Africa	Guinea-Bissau	Wine	0.07
17	1989	Africa	Seychelles	Beer	2.23
18	1984	Europe	Norway	Spirits	1.62
19	1984	Africa	Kenya	Beer	1.08
22	1984	Europe	Romania	Spirits	2.67
23	1984	Europe	Turkey	Beer	0.44
24	1985	Africa	Comoros	Other	NaN
25	1984	Eastern Mediterranean	Tunisia	Other	0.00
26	1985	Europe	United Kingdom of Great Britain and Northern I...	Wine	1.36
27	1984	Eastern Mediterranean	Bahrain	Beer	2.22
29	1986	Europe	Italy	Other	NaN
30	1986	Africa	Sierra Leone	Other	4.48
32	1989	Africa	Mauritius	Beer	1.60
33	1985	Africa	Mauritania	Other	0.00
34	1986	Europe	Russian Federation	Wine	0.80
36	1987	Eastern Mediterranean	Egypt	Beer	0.07
37	1986	Europe	Sweden	Beer	3.04
38	1987	Eastern Mediterranean	Qatar	Other	0.00
39	1987	Africa	Burkina Faso	Spirits	0.01
40	1987	Europe	Austria	Spirits	1.90
41	1986	Europe	Czech Republic	Beer	6.82
42	1984	Europe	Ukraine	Spirits	3.06
44	1985	Europe	Lithuania	Other	NaN
45	1989	Africa	Zimbabwe	Beer	0.19

Year	WHO_region	Country	Beverage Types	Display Value
49 1986	Europe	Malta	Wine	1.49
50 1985	Europe	Switzerland	Other	0.30
51 1987	Europe	Finland	Beer	3.88
52 1986	Eastern Mediterranean	Saudi Arabia	Wine	0.00
53 1984	Eastern Mediterranean	Kuwait	Beer	0.00
57 1989	Europe	Croatia	Wine	5.10
58 1984	Eastern Mediterranean	Somalia	Spirits	0.00
59 1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00
60 1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
63 1985	Eastern Mediterranean	Libya	Other	0.00
65 1989	Eastern Mediterranean	Somalia	Beer	0.00
66 1987	Eastern Mediterranean	Iraq	Wine	0.01
67 1989	Africa	Namibia	Beer	0.00
68 1989	Africa	Uganda	Beer	0.12
69 1986	Africa	Togo	Spirits	0.42
70 1986	Africa	Madagascar	Spirits	1.02
71 1985	Africa	Mali	Other	0.57
72 1987	Africa	Mauritania	Other	0.00
73 1986	Eastern Mediterranean	Pakistan	Other	0.01
75 1989	Eastern Mediterranean	Afghanistan	Other	0.00
76 1985	Africa	Comoros	Beer	0.02
77 1985	Africa	Cameroon	Spirits	0.01
79 1989	Europe	Finland	Other	2.09
80 1985	Africa	Malawi	Other	0.84
81 1985	Europe	Netherlands	Wine	2.54
82 1987	Europe	Ireland	Spirits	2.25
83 1986	Europe	Ukraine	Other	NaN

Year	WHO_region	Country	Beverage Types	Display Value
85 1985	Africa	Democratic Republic of the Congo	Wine	0.01
87 1989	Eastern Mediterranean	Iraq	Wine	0.01
88 1987	Eastern Mediterranean	Lebanon	Beer	0.42
89 1986	Eastern Mediterranean	Lebanon	Wine	0.70
90 1989	Africa	Malawi	Wine	0.01
91 1989	Europe	Bulgaria	Beer	4.43
92 1986	Africa	Eritrea	Spirits	0.00
93 1987	Africa	Madagascar	Other	NaN
94 1985	Europe	Ukraine	Spirits	3.06
95 1984	Africa	Niger	Other	0.00
96 1985	Europe	Luxembourg	Wine	7.38
98 1984	Africa	Equatorial Guinea	Wine	0.00

In [85]: `# write a pandas program to find the average consumption of wine per person > 2  
df[(df['Beverage Types'] == 'Wine') & (df['Display Value'] > 2)]`

Year	WHO region	Country	Beverage Types	Display Value
57 1989	Europe	Croatia	Wine	5.10
81 1985	Europe	Netherlands	Wine	2.54
96 1985	Europe	Luxembourg	Wine	7.38

In [91]: `# write a pandas program to filter rows, based on row numbers ended with 0, Like 0, 10  
lst = list(range(0, len(df) ,10))  
rows = df.iloc[lst, :]  
rows`

Out[91]:

	Year	WHO region	Country	Beverage Types	Display Value
0	1986	Western Pacific	Viet Nam	Wine	0.00
10	1987	Africa	Botswana	Wine	0.20
20	1986	South-East Asia	Myanmar	Wine	0.00
30	1986	Africa	Sierra Leone	Other	4.48
40	1987	Europe	Austria	Spirits	1.90
50	1985	Europe	Switzerland	Other	0.30
60	1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
70	1986	Africa	Madagascar	Spirits	1.02
80	1985	Africa	Malawi	Other	0.84
90	1989	Africa	Malawi	Wine	0.01

In [95]:

```
# write a pandas program to also select with index Label 0 to 9 with some column names

lst = list(range(0, 10))
rows = df.loc[lst, ['Year', 'Country']] # df.iloc[lst, [0, 2]]
rows
```

Out[95]:

	Year	Country
0	1986	Viet Nam
1	1986	Uruguay
2	1985	Cte d'Ivoire
3	1986	Colombia
4	1987	Saint Kitts and Nevis
5	1987	Guatemala
6	1987	Mauritius
7	1985	Angola
8	1986	Antigua and Barbuda
9	1984	Nigeria

In [101...]

```
# to filter all columns where all entries present, check which rows and column has a N
df.isnull().sum()
df.dropna(inplace=True)
df
```

Out[101]:

	Year	WHO region	Country	Beverage Types	Display Value
0	1986	Western Pacific	Viet Nam	Wine	0.00
1	1986	Americas	Uruguay	Other	0.50
2	1985	Africa	Cte d'Ivoire	Wine	1.62
3	1986	Americas	Colombia	Beer	4.27
4	1987	Americas	Saint Kitts and Nevis	Beer	1.98
5	1987	Americas	Guatemala	Other	0.00
6	1987	Africa	Mauritius	Wine	0.13
7	1985	Africa	Angola	Spirits	0.39
8	1986	Americas	Antigua and Barbuda	Spirits	1.55
9	1984	Africa	Nigeria	Other	6.10
10	1987	Africa	Botswana	Wine	0.20
11	1989	Americas	Guatemala	Beer	0.62
12	1985	Western Pacific	Lao People's Democratic Republic	Beer	0.00
13	1984	Eastern Mediterranean	Afghanistan	Other	0.00
14	1985	Western Pacific	Viet Nam	Spirits	0.05
15	1987	Africa	Guinea-Bissau	Wine	0.07
16	1984	Americas	Costa Rica	Wine	0.06
17	1989	Africa	Seychelles	Beer	2.23
18	1984	Europe	Norway	Spirits	1.62
19	1984	Africa	Kenya	Beer	1.08
20	1986	South-East Asia	Myanmar	Wine	0.00
21	1989	Americas	Costa Rica	Spirits	4.51
22	1984	Europe	Romania	Spirits	2.67
23	1984	Europe	Turkey	Beer	0.44
25	1984	Eastern Mediterranean	Tunisia	Other	0.00
26	1985	Europe	United Kingdom of Great Britain and Northern I...	Wine	1.36
27	1984	Eastern Mediterranean	Bahrain	Beer	2.22
28	1987	Western Pacific	Viet Nam	Beer	0.11
30	1986	Africa	Sierra Leone	Other	4.48
31	1986	Western Pacific	Micronesia (Federated States of)	Wine	0.00
32	1989	Africa	Mauritius	Beer	1.60

Year	WHO region	Country	Beverage Types	Display Value
33 1985	Africa	Mauritania	Other	0.00
34 1986	Europe	Russian Federation	Wine	0.80
35 1985	Americas	Saint Kitts and Nevis	Spirits	2.24
36 1987	Eastern Mediterranean	Egypt	Beer	0.07
37 1986	Europe	Sweden	Beer	3.04
38 1987	Eastern Mediterranean	Qatar	Other	0.00
39 1987	Africa	Burkina Faso	Spirits	0.01
40 1987	Europe	Austria	Spirits	1.90
41 1986	Europe	Czech Republic	Beer	6.82
42 1984	Europe	Ukraine	Spirits	3.06
43 1984	Western Pacific	China	Wine	0.03
45 1989	Africa	Zimbabwe	Beer	0.19
46 1987	Americas	Trinidad and Tobago	Spirits	2.26
47 1986	Americas	Mexico	Other	0.04
48 1987	Americas	Nicaragua	Beer	0.70
49 1986	Europe	Malta	Wine	1.49
50 1985	Europe	Switzerland	Other	0.30
51 1987	Europe	Finland	Beer	3.88
52 1986	Eastern Mediterranean	Saudi Arabia	Wine	0.00
53 1984	Eastern Mediterranean	Kuwait	Beer	0.00
54 1984	Americas	El Salvador	Spirits	1.81
55 1989	Americas	Suriname	Wine	0.04
56 1987	Western Pacific	Viet Nam	Wine	0.00
57 1989	Europe	Croatia	Wine	5.10
58 1984	Eastern Mediterranean	Somalia	Spirits	0.00
59 1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00
60 1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
61 1984	Western Pacific	Papua New Guinea	Spirits	0.08
62 1987	Americas	Suriname	Other	0.00

Year	WHO region	Country	Beverage Types	Display Value
63 1985	Eastern Mediterranean	Libya	Other	0.00
64 1989	Americas	Bolivia (Plurinational State of)	Beer	1.26
65 1989	Eastern Mediterranean	Somalia	Beer	0.00
66 1987	Eastern Mediterranean	Iraq	Wine	0.01
67 1989	Africa	Namibia	Beer	0.00
68 1989	Africa	Uganda	Beer	0.12
69 1986	Africa	Togo	Spirits	0.42
70 1986	Africa	Madagascar	Spirits	1.02
71 1985	Africa	Mali	Other	0.57
72 1987	Africa	Mauritania	Other	0.00
73 1986	Eastern Mediterranean	Pakistan	Other	0.01
74 1986	Americas	Bolivia (Plurinational State of)	Spirits	2.06
75 1989	Eastern Mediterranean	Afghanistan	Other	0.00
76 1985	Africa	Comoros	Beer	0.02
77 1985	Africa	Cameroon	Spirits	0.01
78 1989	Americas	Jamaica	Other	0.00
79 1989	Europe	Finland	Other	2.09
80 1985	Africa	Malawi	Other	0.84
81 1985	Europe	Netherlands	Wine	2.54
82 1987	Europe	Ireland	Spirits	2.25
84 1986	South-East Asia	Sri Lanka	Other	0.00
85 1985	Africa	Democratic Republic of the Congo	Wine	0.01
86 1986	Americas	Bahamas	Wine	1.83
87 1989	Eastern Mediterranean	Iraq	Wine	0.01
88 1987	Eastern Mediterranean	Lebanon	Beer	0.42
89 1986	Eastern Mediterranean	Lebanon	Wine	0.70
90 1989	Africa	Malawi	Wine	0.01
91 1989	Europe	Bulgaria	Beer	4.43

Year	WHO region	Country	Beverage Types	Display Value
92 1986	Africa	Eritrea	Spirits	0.00
94 1985	Europe	Ukraine	Spirits	3.06
95 1984	Africa	Niger	Other	0.00
96 1985	Europe	Luxembourg	Wine	7.38
97 1984	South-East Asia	Indonesia	Wine	0.00
98 1984	Africa	Equatorial Guinea	Wine	0.00
99 1985	South-East Asia	Democratic People's Republic of Korea	Wine	0.00

In [104...]

```
# to filter all records starting from the 'Year' column, access every other column

r = range(0, len(df.columns), 2)
lst = list(r)
df.iloc[:, lst]
```

Out[104]:

	Year	Country	Display Value
0	1986	Viet Nam	0.00
1	1986	Uruguay	0.50
2	1985	Cte d'Ivoire	1.62
3	1986	Colombia	4.27
4	1987	Saint Kitts and Nevis	1.98
5	1987	Guatemala	0.00
6	1987	Mauritius	0.13
7	1985	Angola	0.39
8	1986	Antigua and Barbuda	1.55
9	1984	Nigeria	6.10
10	1987	Botswana	0.20
11	1989	Guatemala	0.62
12	1985	Lao People's Democratic Republic	0.00
13	1984	Afghanistan	0.00
14	1985	Viet Nam	0.05
15	1987	Guinea-Bissau	0.07
16	1984	Costa Rica	0.06
17	1989	Seychelles	2.23
18	1984	Norway	1.62
19	1984	Kenya	1.08
20	1986	Myanmar	0.00
21	1989	Costa Rica	4.51
22	1984	Romania	2.67
23	1984	Turkey	0.44
25	1984	Tunisia	0.00
26	1985	United Kingdom of Great Britain and Northern I...	1.36
27	1984	Bahrain	2.22
28	1987	Viet Nam	0.11
30	1986	Sierra Leone	4.48
31	1986	Micronesia (Federated States of)	0.00
32	1989	Mauritius	1.60
33	1985	Mauritania	0.00
34	1986	Russian Federation	0.80
35	1985	Saint Kitts and Nevis	2.24

Year	Country	Display Value
36 1987	Egypt	0.07
37 1986	Sweden	3.04
38 1987	Qatar	0.00
39 1987	Burkina Faso	0.01
40 1987	Austria	1.90
41 1986	Czech Republic	6.82
42 1984	Ukraine	3.06
43 1984	China	0.03
45 1989	Zimbabwe	0.19
46 1987	Trinidad and Tobago	2.26
47 1986	Mexico	0.04
48 1987	Nicaragua	0.70
49 1986	Malta	1.49
50 1985	Switzerland	0.30
51 1987	Finland	3.88
52 1986	Saudi Arabia	0.00
53 1984	Kuwait	0.00
54 1984	El Salvador	1.81
55 1989	Suriname	0.04
56 1987	Viet Nam	0.00
57 1989	Croatia	5.10
58 1984	Somalia	0.00
59 1989	Syrian Arab Republic	0.00
60 1987	Iran (Islamic Republic of)	0.00
61 1984	Papua New Guinea	0.08
62 1987	Suriname	0.00
63 1985	Libya	0.00
64 1989	Bolivia (Plurinational State of)	1.26
65 1989	Somalia	0.00
66 1987	Iraq	0.01
67 1989	Namibia	0.00
68 1989	Uganda	0.12
69 1986	Togo	0.42
70 1986	Madagascar	1.02

Year	Country	Display Value
71 1985	Mali	0.57
72 1987	Mauritania	0.00
73 1986	Pakistan	0.01
74 1986	Bolivia (Plurinational State of)	2.06
75 1989	Afghanistan	0.00
76 1985	Comoros	0.02
77 1985	Cameroon	0.01
78 1989	Jamaica	0.00
79 1989	Finland	2.09
80 1985	Malawi	0.84
81 1985	Netherlands	2.54
82 1987	Ireland	2.25
84 1986	Sri Lanka	0.00
85 1985	Democratic Republic of the Congo	0.01
86 1986	Bahamas	1.83
87 1989	Iraq	0.01
88 1987	Lebanon	0.42
89 1986	Lebanon	0.70
90 1989	Malawi	0.01
91 1989	Bulgaria	4.43
92 1986	Eritrea	0.00
94 1985	Ukraine	3.06
95 1984	Niger	0.00
96 1985	Luxembourg	7.38
97 1984	Indonesia	0.00
98 1984	Equatorial Guinea	0.00
99 1985	Democratic People's Republic of Korea	0.00

In [107...]

```
# to filter all records starting from the 2nd row, access every 5th row

r = range(2, len(df), 5)
lst = list(r)
df.iloc[lst, :]
```

Out[107]:

	Year	WHO region	Country	Beverage Types	Display Value
2	1985	Africa	Cte d'Ivoire	Wine	1.62
7	1985	Africa	Angola	Spirits	0.39
12	1985	Western Pacific	Lao People's Democratic Republic	Beer	0.00
17	1989	Africa	Seychelles	Beer	2.23
22	1984	Europe	Romania	Spirits	2.67
28	1987	Western Pacific	Viet Nam	Beer	0.11
34	1986	Europe	Russian Federation	Wine	0.80
39	1987	Africa	Burkina Faso	Spirits	0.01
45	1989	Africa	Zimbabwe	Beer	0.19
50	1985	Europe	Switzerland	Other	0.30
55	1989	Americas	Suriname	Wine	0.04
60	1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
65	1989	Eastern Mediterranean	Somalia	Beer	0.00
70	1986	Africa	Madagascar	Spirits	1.02
75	1989	Eastern Mediterranean	Afghanistan	Other	0.00
80	1985	Africa	Malawi	Other	0.84
86	1986	Americas	Bahamas	Wine	1.83
91	1989	Europe	Bulgaria	Beer	4.43
97	1984	South-East Asia	Indonesia	Wine	0.00

In [109...]

```
# to rename all and only some of the column names from dataset by adding _ in column name

df1 = df.rename(columns = {'Year': '_Year', 'WHO region' : 'WHO_region',
                        'Beverage Types' : 'Beverage_Types',
                        'Display Value' : 'Display_Value'})

df1
```

Out[109]:	_Year	WHO_region	Country	Beverage_Types	Display_Value
0	1986	Western Pacific	Viet Nam	Wine	0.00
1	1986	Americas	Uruguay	Other	0.50
2	1985	Africa	Cte d'Ivoire	Wine	1.62
3	1986	Americas	Colombia	Beer	4.27
4	1987	Americas	Saint Kitts and Nevis	Beer	1.98
5	1987	Americas	Guatemala	Other	0.00
6	1987	Africa	Mauritius	Wine	0.13
7	1985	Africa	Angola	Spirits	0.39
8	1986	Americas	Antigua and Barbuda	Spirits	1.55
9	1984	Africa	Nigeria	Other	6.10
10	1987	Africa	Botswana	Wine	0.20
11	1989	Americas	Guatemala	Beer	0.62
12	1985	Western Pacific	Lao People's Democratic Republic	Beer	0.00
13	1984	Eastern Mediterranean	Afghanistan	Other	0.00
14	1985	Western Pacific	Viet Nam	Spirits	0.05
15	1987	Africa	Guinea-Bissau	Wine	0.07
16	1984	Americas	Costa Rica	Wine	0.06
17	1989	Africa	Seychelles	Beer	2.23
18	1984	Europe	Norway	Spirits	1.62
19	1984	Africa	Kenya	Beer	1.08
20	1986	South-East Asia	Myanmar	Wine	0.00
21	1989	Americas	Costa Rica	Spirits	4.51
22	1984	Europe	Romania	Spirits	2.67
23	1984	Europe	Turkey	Beer	0.44
25	1984	Eastern Mediterranean	Tunisia	Other	0.00
26	1985	Europe	United Kingdom of Great Britain and Northern I...	Wine	1.36
27	1984	Eastern Mediterranean	Bahrain	Beer	2.22
28	1987	Western Pacific	Viet Nam	Beer	0.11
30	1986	Africa	Sierra Leone	Other	4.48
31	1986	Western Pacific	Micronesia (Federated States of)	Wine	0.00
32	1989	Africa	Mauritius	Beer	1.60

<u>Year</u>	<u>WHO_region</u>	<u>Country</u>	<u>Beverage_Types</u>	<u>Display_Value</u>	
33	1985	Africa	Mauritania	Other	0.00
34	1986	Europe	Russian Federation	Wine	0.80
35	1985	Americas	Saint Kitts and Nevis	Spirits	2.24
36	1987	Eastern Mediterranean	Egypt	Beer	0.07
37	1986	Europe	Sweden	Beer	3.04
38	1987	Eastern Mediterranean	Qatar	Other	0.00
39	1987	Africa	Burkina Faso	Spirits	0.01
40	1987	Europe	Austria	Spirits	1.90
41	1986	Europe	Czech Republic	Beer	6.82
42	1984	Europe	Ukraine	Spirits	3.06
43	1984	Western Pacific	China	Wine	0.03
45	1989	Africa	Zimbabwe	Beer	0.19
46	1987	Americas	Trinidad and Tobago	Spirits	2.26
47	1986	Americas	Mexico	Other	0.04
48	1987	Americas	Nicaragua	Beer	0.70
49	1986	Europe	Malta	Wine	1.49
50	1985	Europe	Switzerland	Other	0.30
51	1987	Europe	Finland	Beer	3.88
52	1986	Eastern Mediterranean	Saudi Arabia	Wine	0.00
53	1984	Eastern Mediterranean	Kuwait	Beer	0.00
54	1984	Americas	El Salvador	Spirits	1.81
55	1989	Americas	Suriname	Wine	0.04
56	1987	Western Pacific	Viet Nam	Wine	0.00
57	1989	Europe	Croatia	Wine	5.10
58	1984	Eastern Mediterranean	Somalia	Spirits	0.00
59	1989	Eastern Mediterranean	Syrian Arab Republic	Other	0.00
60	1987	Eastern Mediterranean	Iran (Islamic Republic of)	Other	0.00
61	1984	Western Pacific	Papua New Guinea	Spirits	0.08
62	1987	Americas	Suriname	Other	0.00

<u>Year</u>	<u>WHO_region</u>	<u>Country</u>	<u>Beverage_Types</u>	<u>Display_Value</u>
63 1985	Eastern Mediterranean	Libya	Other	0.00
64 1989	Americas	Bolivia (Plurinational State of)	Beer	1.26
65 1989	Eastern Mediterranean	Somalia	Beer	0.00
66 1987	Eastern Mediterranean	Iraq	Wine	0.01
67 1989	Africa	Namibia	Beer	0.00
68 1989	Africa	Uganda	Beer	0.12
69 1986	Africa	Togo	Spirits	0.42
70 1986	Africa	Madagascar	Spirits	1.02
71 1985	Africa	Mali	Other	0.57
72 1987	Africa	Mauritania	Other	0.00
73 1986	Eastern Mediterranean	Pakistan	Other	0.01
74 1986	Americas	Bolivia (Plurinational State of)	Spirits	2.06
75 1989	Eastern Mediterranean	Afghanistan	Other	0.00
76 1985	Africa	Comoros	Beer	0.02
77 1985	Africa	Cameroon	Spirits	0.01
78 1989	Americas	Jamaica	Other	0.00
79 1989	Europe	Finland	Other	2.09
80 1985	Africa	Malawi	Other	0.84
81 1985	Europe	Netherlands	Wine	2.54
82 1987	Europe	Ireland	Spirits	2.25
84 1986	South-East Asia	Sri Lanka	Other	0.00
85 1985	Africa	Democratic Republic of the Congo	Wine	0.01
86 1986	Americas	Bahamas	Wine	1.83
87 1989	Eastern Mediterranean	Iraq	Wine	0.01
88 1987	Eastern Mediterranean	Lebanon	Beer	0.42
89 1986	Eastern Mediterranean	Lebanon	Wine	0.70
90 1989	Africa	Malawi	Wine	0.01
91 1989	Europe	Bulgaria	Beer	4.43
92 1986	Africa	Eritrea	Spirits	0.00

<u>Year</u>	<u>WHO_region</u>		<u>Country</u>	<u>Beverage_Types</u>	<u>Display_Value</u>
94	1985	Europe	Ukraine	Spirits	3.06
95	1984	Africa	Niger	Other	0.00
96	1985	Europe	Luxembourg	Wine	7.38
97	1984	South-East Asia	Indonesia	Wine	0.00
98	1984	Africa	Equatorial Guinea	Wine	0.00
99	1985	South-East Asia	Democratic People's Republic of Korea	Wine	0.00