In [311…

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

In [312…

```
gun = pd.read_html("https://en.wikipedia.org/wiki/Estimated_number_of_civilian_guns_per_ca
```

In [313…

```
gun1 = gun[0]
```

In [314…

```
gun2 = gun1.iloc[:, 1:]
```

In [80]:

```
print(gun2)
```

```
    Country or subnational area  \
0                           NaN
1                 United States
2               Falkland Islands
3                         Yemen
4                  New Caledonia
..                           ...
226             Christmas Island
227                    Holy See
228                   Indonesia
229                       Nauru
230                      Taiwan

     Estimate of civilian firearms per 100 persons    Region        Subregion  \
0                                              NaN       NaN              NaN
1                                            120.5  Americas    North America
2                                             62.1  Americas    South America
3                                             52.8      Asia     Western Asia
4                                             42.5   Oceania        Melanesia
..                                             ...       ...              ...
226                                           0.0       Asia  South-East Asia
227                                           0.0     Europe  Southern Europe
228                                           0.0       Asia  South-East Asia
229                                           0.0   Oceania        Melanesia
230                                           0.0       Asia        East Asia

     Population 2017 Estimate of firearms in civilian possession  \
0                NaN                                         NaN
1       326474000.0                                   393347000
2            3000.0                                        2000
3        28120000.0                                    14859000
4          270000.0                                      115000
..              ...                                         ...
226        2000.0                                           -
227        1000.0                                           -
228      263510000.0                                     82000
229       10000.0                                           -
230       23405000.0                                     10000

     Computation method  Registered firearms  Unregistered firearms     Notes
0                   NaN                  NaN                    NaN       NaN
1                   1.0            1073743.0            392273257.0  [note 2]
2                   2.0               1705.0                  295.0       NaN
3                   2.0                  NaN                    NaN       NaN
```

```
4                 2.0          55000.0          60000.0       NaN
..                ...              ...              ...       ...
226               2.0             NaN              NaN       NaN
227               2.0             NaN              NaN       NaN
228               2.0         41102.0          40898.0       NaN
229               2.0             NaN              NaN       NaN
230               2.0          5000.0           5000.0       NaN

[231 rows x 10 columns]
```

In [315…
```
gun2 = gun2.rename(columns = {'Country or subnational area': 'Country'})
```

In [88]:
```
gun2
```

Out[88]:

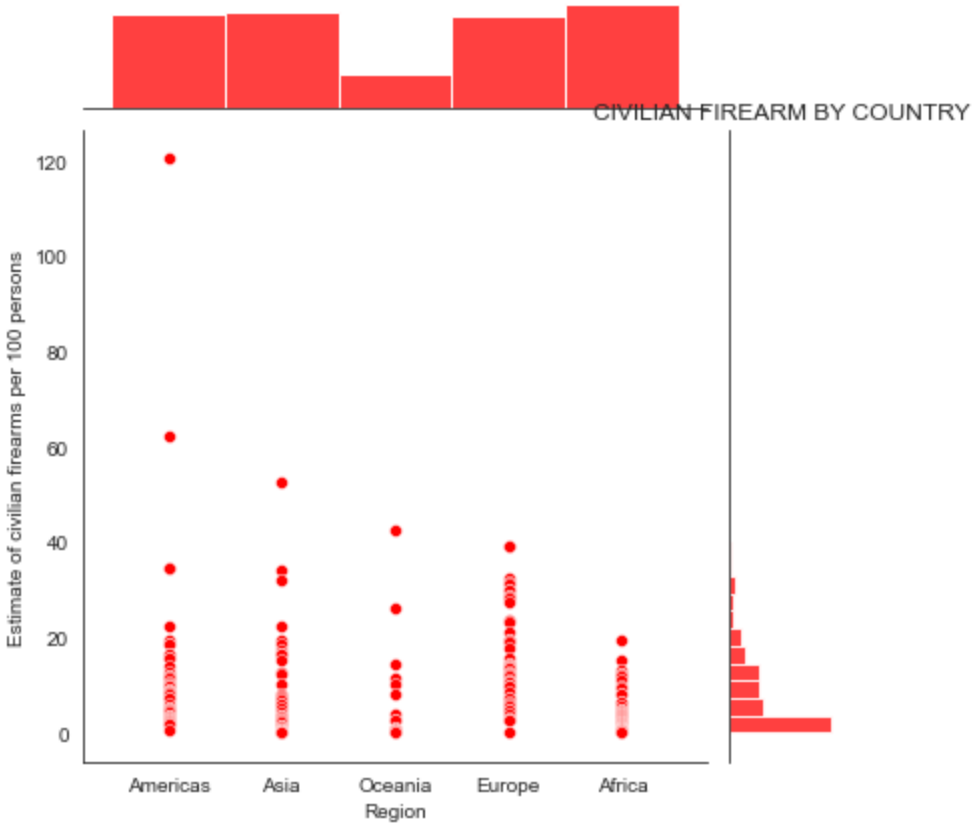
	Country	Estimate of civilian firearms per 100 persons	Region	Subregion	Population 2017	Estimate of firearms in civilian possession	Computation method	Registered firearms	Unregistered firearms	Nc
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	N
1	United States	120.5	Americas	North America	326474000.0	393347000	1.0	1073743.0	392273257.0	[n
2	Falkland Islands	62.1	Americas	South America	3000.0	2000	2.0	1705.0	295.0	N
3	Yemen	52.8	Asia	Western Asia	28120000.0	14859000	2.0	NaN	NaN	N
4	New Caledonia	42.5	Oceania	Melanesia	270000.0	115000	2.0	55000.0	60000.0	N
…	…	…	…	…	…	…	…	…	…	
226	Christmas Island	0.0	Asia	South-East Asia	2000.0	–	2.0	NaN	NaN	N
227	Holy See	0.0	Europe	Southern Europe	1000.0	–	2.0	NaN	NaN	N
228	Indonesia	0.0	Asia	South-East Asia	263510000.0	82000	2.0	41102.0	40898.0	N
229	Nauru	0.0	Oceania	Melanesia	10000.0	–	2.0	NaN	NaN	N
230	Taiwan	0.0	Asia	East Asia	23405000.0	10000	2.0	5000.0	5000.0	N

231 rows × 10 columns

In [75]:
```
sns.set_style("white")
plt.figure(figsize =(10,10))
sns.jointplot(data = gun2, x = 'Region', y = 'Estimate of civilian firearms per 100 perso
plt.xlabel("Region")
plt.title('CIVILIAN FIREARM BY COUNTRY', loc = 'center')
```

Out[75]:
```
Text(0.5, 1.0, 'CIVILIAN FIREARM BY COUNTRY')

<Figure size 720x720 with 0 Axes>
```



In [55]:
```
gun2.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 231 entries, 0 to 230
Data columns (total 9 columns):
 #   Column                                          Non-Null Count  Dtype  
---  ------                                          --------------  -----  
 0   Estimate of civilian firearms per 100 persons   230 non-null    float64
 1   Region                                          230 non-null    object 
 2   Subregion                                       230 non-null    object 
 3   Population 2017                                 230 non-null    float64
 4   Estimate of firearms in civilian possession     230 non-null    object 
 5   Computation method                              230 non-null    float64
 6   Registered firearms                             136 non-null    float64
 7   Unregistered firearms                           136 non-null    float64
 8   Notes                                           7 non-null      object 
dtypes: float64(5), object(4)
memory usage: 16.4+ KB
```

In [56]:
```
gun2.describe()
```

Out[56]:

	Estimate of civilian firearms per 100 persons	Population 2017	Computation method	Registered firearms	Unregistered firearms
count	230.000000	2.300000e+02	230.000000	1.360000e+02	1.360000e+02
mean	9.808261	3.269225e+07	2.113043	7.347404e+05	5.029361e+06
std	12.461026	1.321551e+08	0.549159	1.590962e+06	3.431910e+07
min	0.000000	1.000000e+03	1.000000	4.800000e+01	5.000000e+01
25%	2.100000	6.060000e+05	2.000000	1.647000e+04	5.616750e+04
50%	5.900000	5.522000e+06	2.000000	1.421490e+05	2.533020e+05
75%	13.525000	2.048825e+07	2.000000	5.419222e+05	8.167750e+05

	Estimate of civilian firearms per 100 persons	Population 2017	Computation method	Registered firearms	Unregistered firearms
max	120.500000	1.388233e+09	3.000000	9.700000e+06	3.922733e+08

In [77]:
```
heat_map = gun2.corr()
```

In [78]:
```
sns.heatmap(data = heat_map)
```

Out[78]:
```
<AxesSubplot:>
```

In [41]:
```
from bs4 import BeautifulSoup
import requests
```

In [11]:
```
url = 'https://www.numbeo.com/crime/rankings_by_country.jsp'
```

In [12]:
```
page = requests.get(url)
```

In [13]:
```
soup = BeautifulSoup(page.text, 'lxml')
```

In [14]:
```
#getting the data
```

In [33]:
```
table = soup.find('table', {'id': 't2'})
```

In [26]:
```
headers = []
```

```
for i in table.find_all('th'):
    title = i.text.strip()
    headers.append(title)
```

In [27]:
```
headers
```

Out[27]:
```
['Rank', 'Country', 'Crime Index', 'Safety Index']
```

In [29]:
```
crime = pd.DataFrame(columns = headers)
```

In [36]:
```
for row in table.find_all('tr')[1:]:
    data = row.find_all('td')
    row_data = [td.text.strip() for td in data]
    length = len(crime)
    crime.loc[length] = row_data
```

In [316…
```
crime
```

Out[316…

	Rank	Country	Crime Index	Safety Index
0		Venezuela	83.58	16.42
1		Papua New Guinea	81.19	18.81
2		Afghanistan	77.01	22.99
3		South Africa	76.06	23.94
4		Honduras	74.16	25.84
...	...	...	...	...
137		Oman	19.99	80.01
138		Isle Of Man	18.63	81.37
139		Taiwan	15.87	84.13
140		United Arab Emirates	15.14	84.86
141		Qatar	13.78	86.22

142 rows × 4 columns

In [322…
```
combined = pd.merge(gun2, crime, how = 'inner', on = 'Country')
```

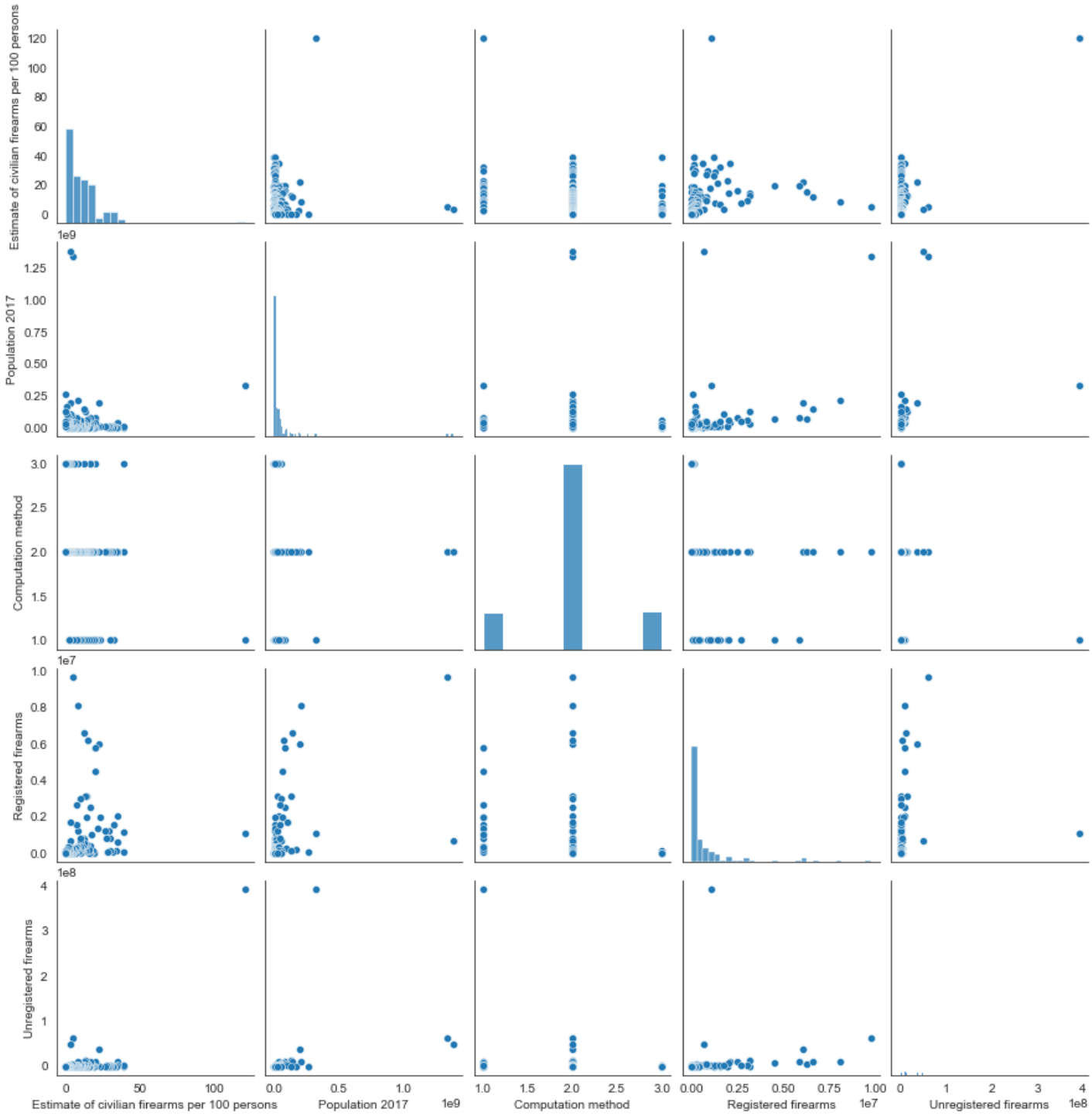
In [321…
```
combined.columns
```

Out[321…
```
Index(['Country', 'Estimate of civilian firearms per 100 persons', 'Region',
       'Subregion', 'Population 2017',
       'Estimate of firearms in civilian possession', 'Computation method',
       'Registered firearms', 'Unregistered firearms', 'Notes', 'Rank',
       'Crime Index', 'Safety Index'],
      dtype='object')
```

In [107…
```
sns.pairplot(data = combined)
```

```
<seaborn.axisgrid.PairGrid at 0x2c2bb1df520>
```

Out[107…



In [325…

```
combined['Crime Index'] = combined['Crime Index'].astype('float')
```

In [326…

```
combined['Safety Index'] = combined['Safety Index'].astype('float')
```

In [327…

```
combined['Safety Index'].dtypes
```

Out[327…

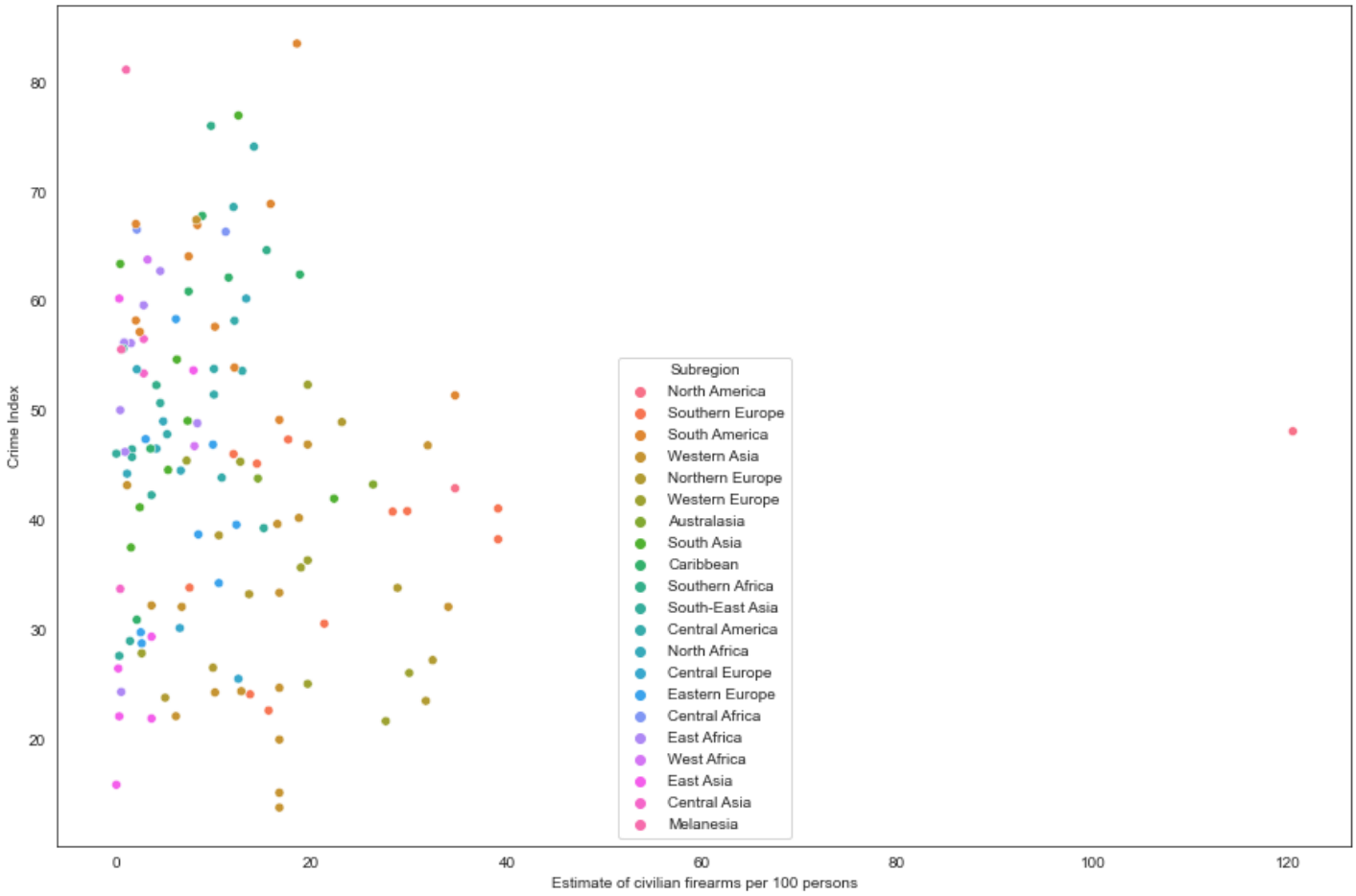
```
dtype('float64')
```

In [159…

```
plt.figure(figsize =(15,10))
sns.scatterplot(x = 'Estimate of civilian firearms per 100 persons', y = 'Crime Index' , c
```

Out[159…

```
<AxesSubplot:xlabel='Estimate of civilian firearms per 100 persons', ylabel='Crime Index'>
```



despite the high number of firearms per 100 persons in Southern Europe, Crime Index is relatively low South America has the highest Crime Index North Amerca has the hghest number of firearms per 100 persons

In [328…

```
combined.columns
```

Out[328…

```
Index(['Country', 'Estimate of civilian firearms per 100 persons', 'Region',
       'Subregion', 'Population 2017',
       'Estimate of firearms in civilian possession', 'Computation method',
       'Registered firearms', 'Unregistered firearms', 'Notes', 'Rank',
       'Crime Index', 'Safety Index'],
      dtype='object')
```

In [336…

```
combined['Unregistered firearms'].fillna(0, inplace = True)
combined['Registered firearms'].fillna(0, inplace = True)
```

In [355…

```
X = combined[['Country', 'Estimate of civilian firearms per 100 persons', 'Region',
       'Subregion', 'Population 2017',
       'Estimate of firearms in civilian possession',
       'Registered firearms', 'Unregistered firearms']]
X = X.select_dtypes(include = 'number')
```

In [356…

```
X1 = X.select_dtypes(include = 'number')
```

In [262…

```
from sklearn.preprocessing import StandardScaler
```

In [263…

```
Ss = StandardScaler()
Ss.fit(X)
```

Out[263…
```
StandardScaler()
```

In [339…
```
X.isnull().sum()
```

Out[339…
```
Estimate of civilian firearms per 100 persons    0
Population 2017                                  0
Registered firearms                              0
Unregistered firearms                            0
dtype: int64
```

In [340…
```
X = Ss.transform(X)
```

In [265…
```
y = combined['Crime Index']
```

In [266…
```
from sklearn.model_selection import train_test_split
```

In [342…
```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.33, random_state=42)
```

In [343…
```
from sklearn.linear_model import LinearRegression
```

In [344…
```
lr = LinearRegression()
```

In [345…
```
lr.fit(X_train, y_train)
```

Out[345…
```
LinearRegression()
```

In [346…
```
lr.coef_
```

Out[346…
```
array([ -3.01357467,   0.68368019,  -0.70918825, -12.86949433])
```

In [362…
```
pd.DataFrame(lr.coef_, index = X1.columns, columns = ['variable'])
```

Out[362…

	variable
Estimate of civilian firearms per 100 persons	-3.013575
Population 2017	0.683680
Registered firearms	-0.709188
Unregistered firearms	-12.869494

In [354…
```

```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
~\AppData\Local\Temp/ipykernel_9576/2714704618.py in <module>
----> 1 X.columns

AttributeError: 'numpy.ndarray' object has no attribute 'columns'
```

In [ ]: