ML Mini Project

In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
data= pd.read_csv('suicide.csv')
data.head()
```

Out[1]:

	country	year	sex	age	suicides_no	population	suicides/100k pop	country-year	HDI for year	gdp_for_year ($)	gdp_per_capita ($)	generation
0	Albania	1987	male	15-24 years	21	312900	6.71	Albania1987	NaN	2,156,624,900	796	Generation X
1	Albania	1987	male	35-54 years	16	308000	5.19	Albania1987	NaN	2,156,624,900	796	Silent
2	Albania	1987	female	15-24 years	14	289700	4.83	Albania1987	NaN	2,156,624,900	796	Generation X
3	Albania	1987	male	75+ years	1	21800	4.59	Albania1987	NaN	2,156,624,900	796	G.I. Generation
4	Albania	1987	male	25-34 years	9	274300	3.28	Albania1987	NaN	2,156,624,900	796	Boomers

In [2]:

```
data.drop(columns=['country', 'year', 'sex', 'age', 'country-year','generation'], inplace=True)
data[' gdp_for_year ($) '] = data[' gdp_for_year ($) '].str.replace(',', '')
data[' gdp_for_year ($) '] = data[' gdp_for_year ($) '].astype(np.int64)
```

In [3]:

```
data.dropna(inplace=True)
```

In [4]:

```
data.isnull().sum()
```

Out[4]:

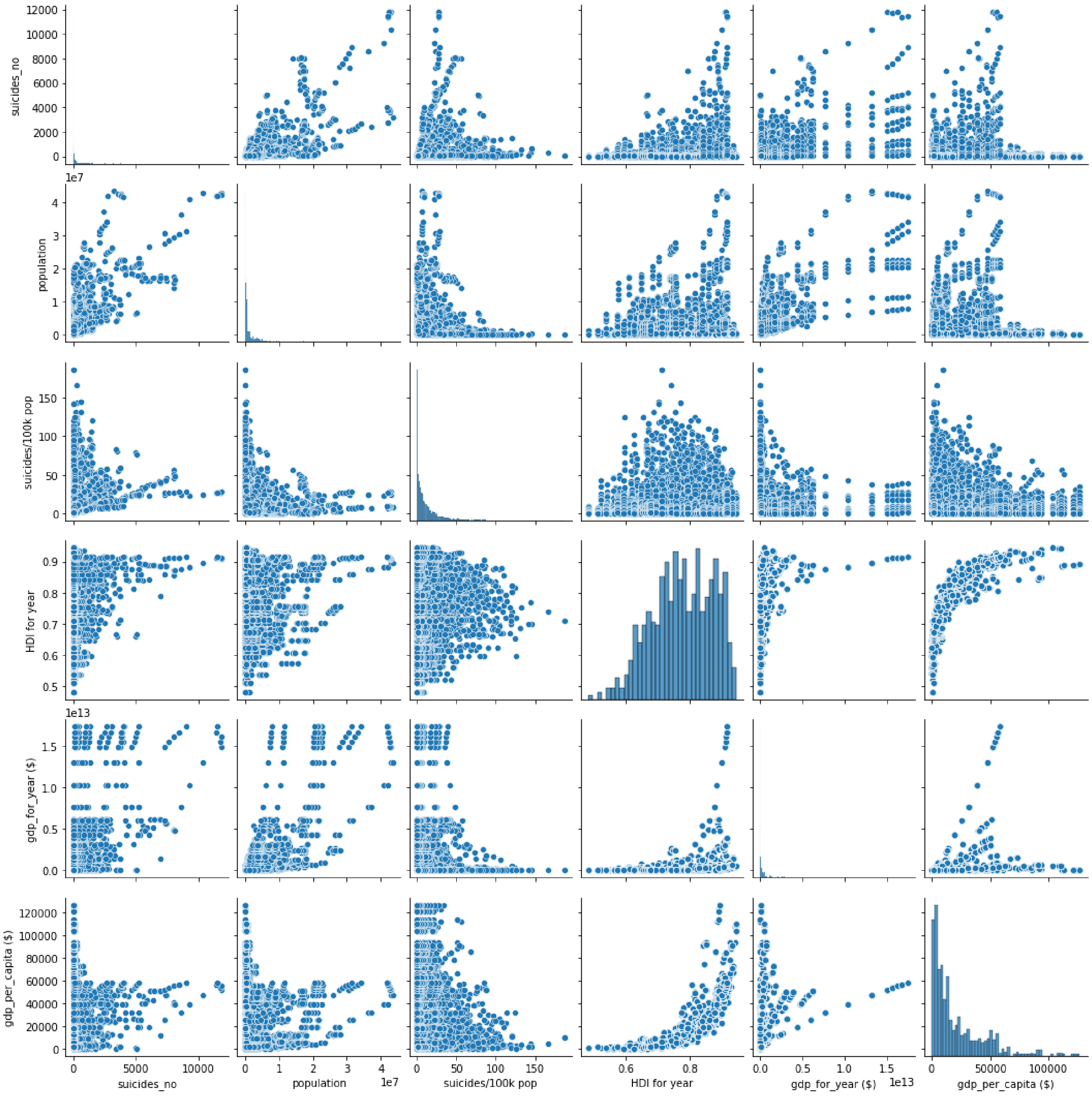
```
suicides_no           0
population            0
suicides/100k pop     0
HDI for year          0
 gdp_for_year ($)     0
gdp_per_capita ($)    0
dtype: int64
```

In [5]:

```
import seaborn as sns
sns.pairplot(data)
```

Out[5]:

```
<seaborn.axisgrid.PairGrid at 0x1ffc7ac2130>
```



In [6]:

```
import sklearn
from sklearn import metrics
from sklearn.model_selection import train_test_split
X= data.drop(labels = ['suicides_no'],axis = 1)
Y=data.iloc[:,:1]
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.3, random_state=0)
print(X_train.shape)
print(X_test.shape)
```

```
(5854, 5)
(2510, 5)
```

In [7]:

```
from sklearn.model_selection import KFold
from sklearn.model_selection import cross_val_score
kfold = KFold(n_splits=10, random_state=0,shuffle=True)
```

In [8]:

```
from sklearn.tree import DecisionTreeClassifier
cv_result = cross_val_score(DecisionTreeClassifier(),X_train,Y_train.values.ravel(), cv = kfold,scoring = "accuracy")
res_DecisionTreeClassifier=cv_result.mean()*100
```

In [9]:

```
from sklearn.neural_network import MLPClassifier
cv_result = cross_val_score(MLPClassifier(hidden_layer_sizes=(45,30,15),solver='sgd',learning_rate_init=0.01,max_iter=500)
                ,X_train,Y_train.values.ravel(), cv = kfold,scoring = "accuracy")
res_MLPClassifier=cv_result.mean()*100
```

In [10]:

```
from sklearn.naive_bayes import GaussianNB
cv_result = cross_val_score(GaussianNB(),X_train,Y_train.values.ravel(), cv = kfold,scoring = "accuracy")
res_GaussianNB=cv_result.mean()*100
```

In [11]:

```
from sklearn.ensemble import RandomForestClassifier
cv_result = cross_val_score(RandomForestClassifier(n_estimators=7)
                            ,X_train,Y_train.values.ravel(), cv = kfold,scoring = "accuracy")
res_RandomForestClassifier=cv_result.mean()*100
```

In [12]:

```
print("Accuracy of Decision Tree Classifier is : "+str(res_DecisionTreeClassifier)+"%")
print("Accuracy of MLP Classifier is : "+str(res_MLPClassifier)+"%")
print("Accuracy of Naive Bayes - Gaussian is : "+str(res_GaussianNB)+"%")
print("Accuracy of Random Forest Classifier is : "+str(res_RandomForestClassifier)+"%")
```

```
Accuracy of Decision Tree Classifier is : 36.164143403051256%
Accuracy of MLP Classifier is : 13.717540328461828%
Accuracy of Naive Bayes - Gaussian is : 13.273387590793734%
Accuracy of Random Forest Classifier is : 27.998483124762984%
```