Unemployementanalysis

September 17, 2025

[1]:
```
#Import libraries
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[2]:
```
#Dataset Loading
df=pd.read_csv('Unemployement.csv')
print("Dataset Loaded Successfully")
df.head()
```

```
Dataset Loaded Successfully
```

[2]:

	Year	Population (millions)	GDP Growth Rate (%)	Inflation Rate (%)	\
0	2000	138.0	4.2	3.6	
1	2001	140.5	3.1	4.4	
2	2002	143.0	3.7	3.5	
3	2003	145.5	5.0	3.1	
4	2004	148.0	6.4	7.4	

	Unemployment Rate (%)	Poverty Headcount Ratio (%)	\
0	6.0	34.7	
1	6.2	33.5	
2	6.1	32.1	
3	5.8	30.2	
4	5.5	28.6	

	Agriculture Growth Rate (%)	Government Social Spending (% of GDP)	\
0	2.5	3.0	
1	2.0	3.1	
2	4.1	3.2	
3	4.5	3.3	
4	6.0	3.5	

	External Debt (USD billions)	Climate Disasters (count)
0	55.0	2
1	57.0	1
2	58.5	1
3	59.0	0

```
4                          60.0                          1
```

[4]:
```
#EDA
print("Information of dataset:")
df.info()
```

```
Information of dataset:
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 5 columns):
 #   Column                 Non-Null Count  Dtype
---  ------                 --------------  -----
 0   Year                   11 non-null     int64
 1   Unemployment Rate (%)  11 non-null     float64
 2   GDP Growth Rate (%)    11 non-null     float64
 3   Inflation Rate (%)     11 non-null     float64
 4   Period                 11 non-null     object
dtypes: float64(3), int64(1), object(1)
memory usage: 572.0+ bytes
```

[7]:
```
print("Missing values in dataset:")
df.isnull().sum()
```

```
Missing values in dataset:
```

[7]:
```
Year                    0
Unemployment Rate (%)   0
GDP Growth Rate (%)     0
Inflation Rate (%)      0
Period                  0
dtype: int64
```

[10]:
```
print("Duplicate values in dataset:")
df.duplicated()
```

```
Duplicate values in dataset:
```

[10]:
```
0     False
1     False
2     False
3     False
4     False
5     False
6     False
7     False
8     False
9     False
10    False
dtype: bool
```

[8]:
```
print("Summay Statistic of dataset:")
df.describe()
```

```
Summay Statistic of dataset:
```

[8]:

	Year	Unemployment Rate (%)	GDP Growth Rate (%)	Inflation Rate (%)
count	11.000000	11.000000	11.000000	11.000000
mean	2012.090909	5.936364	3.690909	4.527273
std	9.802597	1.260375	3.424749	1.675166
min	2000.000000	4.600000	-3.500000	3.000000
25%	2002.500000	5.000000	3.400000	3.350000
50%	2018.000000	5.800000	5.000000	3.800000
75%	2020.500000	6.150000	6.050000	5.450000
max	2023.000000	8.500000	6.400000	7.400000

[13]:
```
#Catagorize Time into before,during,after Covid-19
def divide(Year):
    if Year<2020:
        return "Before COVID-19"
    elif  2020<=Year<=2021:
        return "During COVID-19"
    else:
        return "After COVID-19"
df["Time"]=df["Year"].apply(divide)
df.head()
```

[13]:

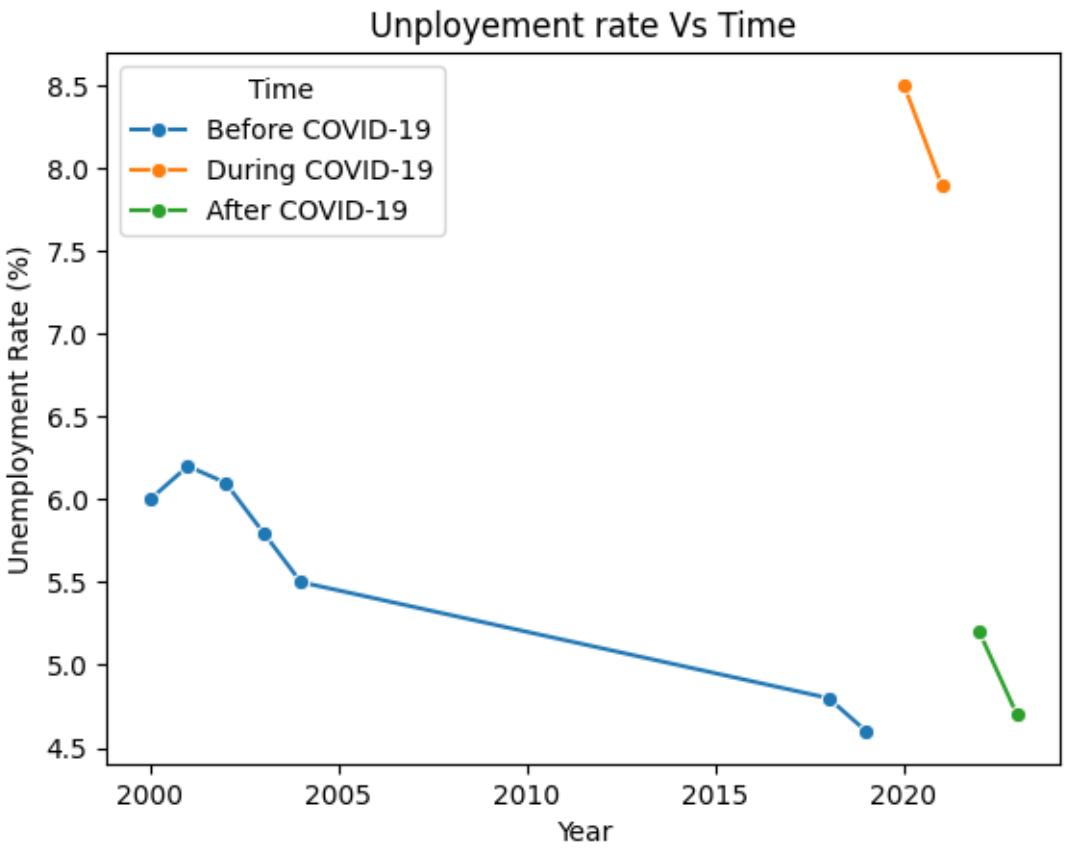
	Year	Unemployment Rate (%)	GDP Growth Rate (%)	Inflation Rate (%)	Period	Time
0	2000	6.0	4.2	3.6	Before Covid	Before COVID-19
1	2001	6.2	3.1	4.4	Before Covid	Before COVID-19
2	2002	6.1	3.7	3.5	Before Covid	Before COVID-19
3	2003	5.8	5.0	3.1		
4	2004	5.5	6.4	7.4		

```
3  Before Covid  Before COVID-19
4  Before Covid  Before COVID-19
```

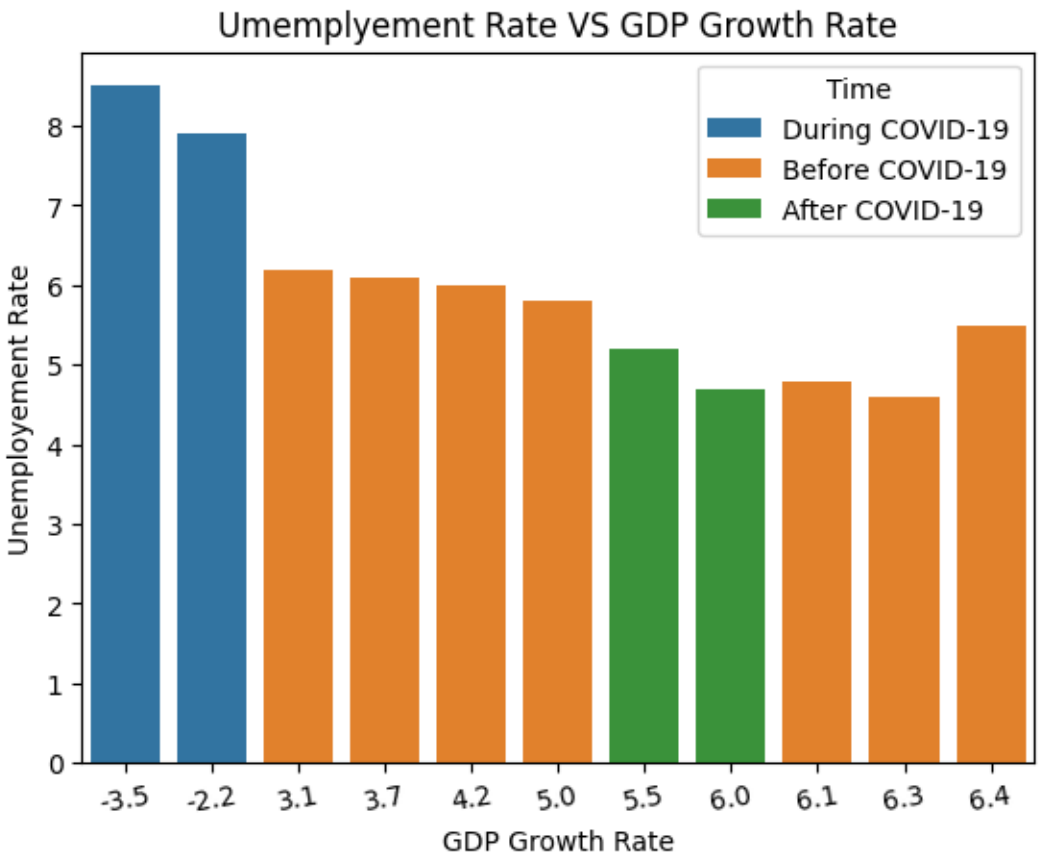
[14]:
```
compare= df.groupby("Time").mean(numeric_only=True)
print("  Average Indicators by Period:\n")
print(compare)
```

```
 Average Indicators by Period:

                        Year  Unemployment Rate (%)  GDP Growth Rate (%)  \
Time
After COVID-19   2022.500000               4.950000             5.750000
Before COVID-19  2006.714286               5.571429             4.971429
During COVID-19  2020.500000               8.200000            -2.850000

                 Inflation Rate (%)
Time
After COVID-19             3.950000
Before COVID-19            4.028571
During COVID-19            6.850000
```

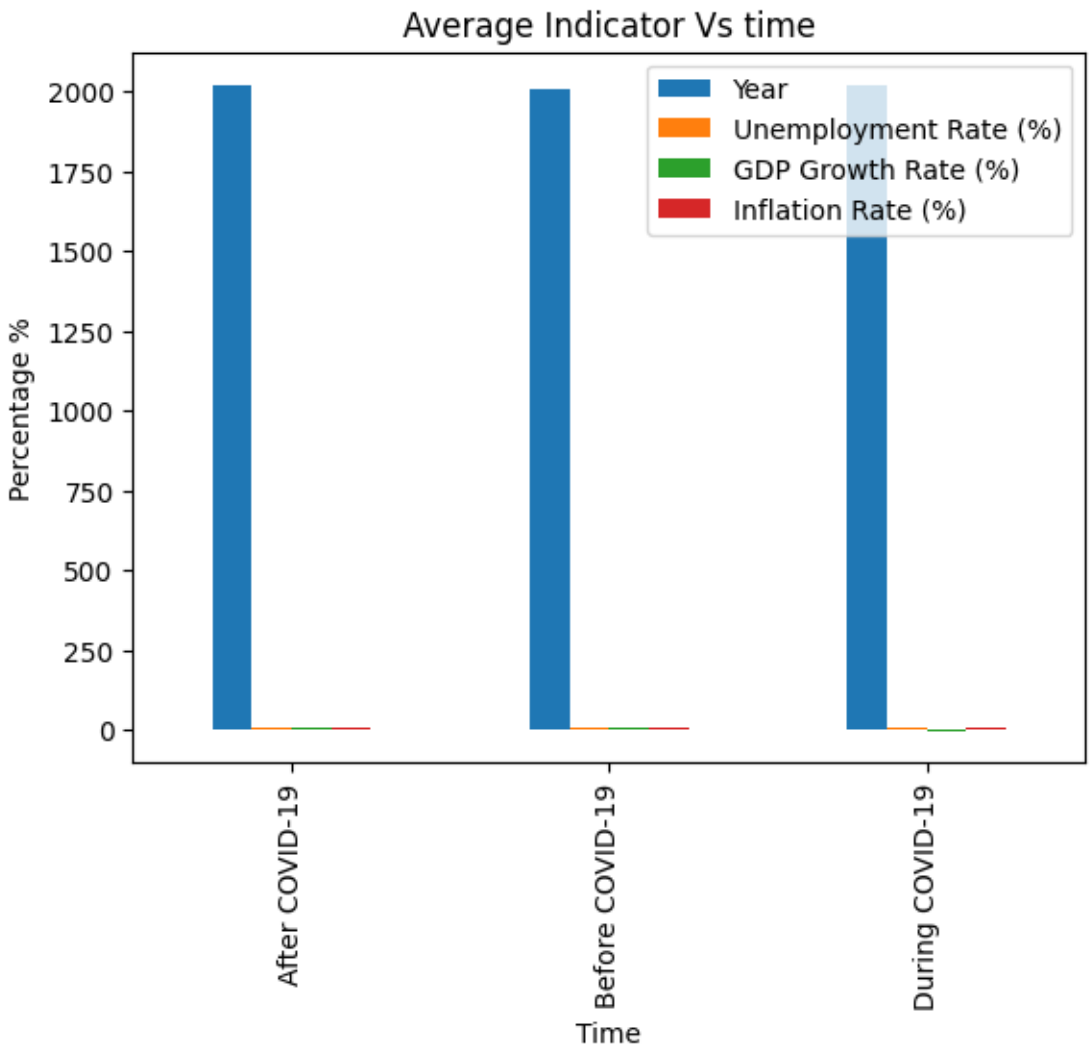
[20]:
```
#Visualization or Analysis
plt.title("Unployement rate Vs Time")
sns.lineplot(x="Year",y= "Unemployment Rate (%)",data=df,hue="Time",marker='o')
plt.xlabel("Year")
plt.ylabel("Unemployment Rate (%)")
plt.show()
```



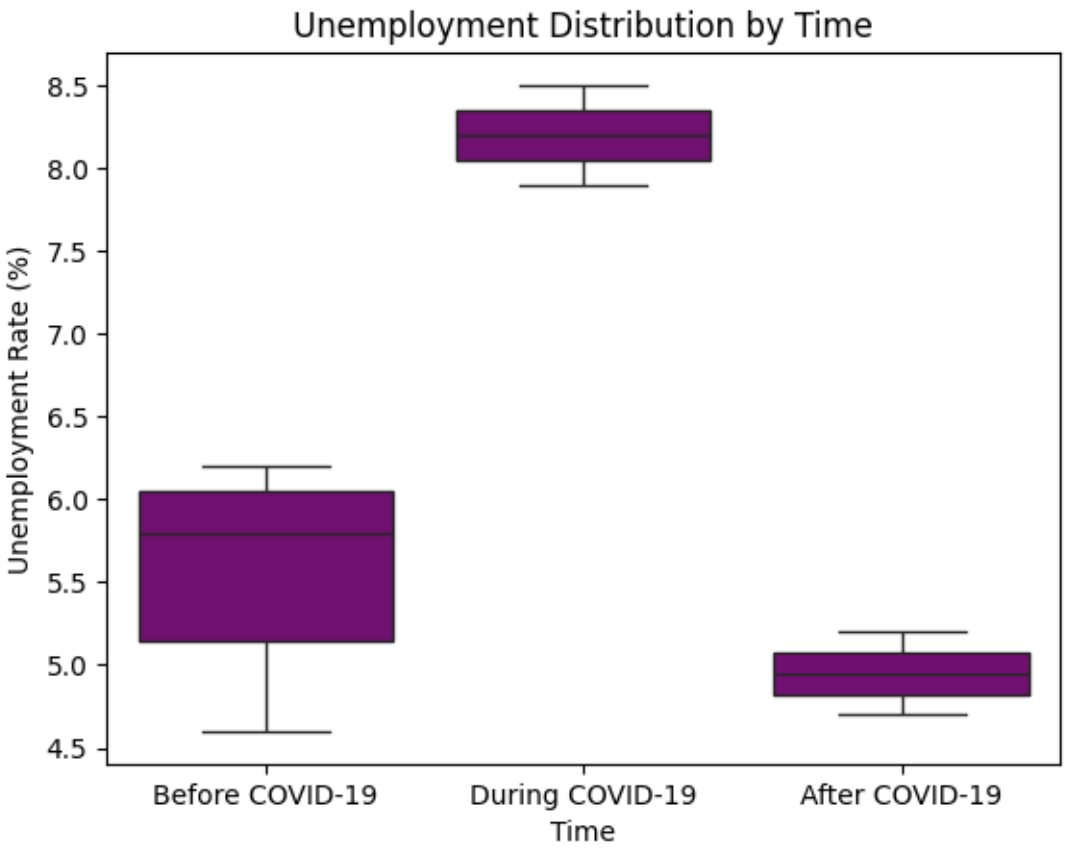
[22]:
```
#Unemplyement Vs GDP Growth rate
sns.barplot(x="GDP Growth Rate (%)",y="Unemployment Rate␣
 ↪(%)",data=df,hue="Time")
plt.title("Umemplyement Rate VS GDP Growth Rate")
plt.xlabel("GDP Growth Rate")
plt.ylabel("Unemployement Rate")
plt.xticks(rotation=10)
plt.show()
```



[27]:
```
#Comparison plot
compare.plot(kind="bar")
plt.title("Average Indicator Vs time")
plt.ylabel("Percentage %")
plt.show()
```



[32]:
```
sns.boxplot(data=df, x="Time", y="Unemployment Rate (%)",color='purple')
plt.title("Unemployment Distribution by Time")
plt.show()
```



[42]:
```
Corr=df.corr(numeric_only=True)
sns.heatmap(Corr,annot=True,cmap="YlGnBu")
```

[42]: <Axes: >


Year
Unemployment Rate (%)
GDP Growth Rate (%)
Inflation Rate (%)
1
0.0038
-0.2
0.13
0.0038
1
-0.97
0.65
-0.2
-0.97
1
-0.59
0.13
0.65
-0.59
1
Year
Unemployment Rate (%)
GDP Growth Rate (%)
Inflation Rate (%)
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75

[ ]: