

UNEMPLOYMENT ANALYSIS WITH PYTHON

Unemployment is measured by the unemployment rate which is the number of people who are unemployed as a percentage of the total labour force. We have seen a sharp increase in the unemployment rate during Covid-19, so analysing the unemployment rate can be a good data science project.

Steps to build a model

1.Import Libraries 2.Import dataset 3.Analysing the data 4.Conclusion

Import Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
```

Import dataset

```
sample = pd.read_csv('Unemployment_Rate_upto_11_2020.csv')
```

```
sample.head()
```

	Region	Date	Frequency	Estimated Unemployment
Rate (%) \				
0	Andhra Pradesh	31-01-2020	M	5.48
1	Andhra Pradesh	29-02-2020	M	5.83
2	Andhra Pradesh	31-03-2020	M	5.79
3	Andhra Pradesh	30-04-2020	M	20.51
4	Andhra Pradesh	31-05-2020	M	17.43

	Estimated Employed	Estimated Labour Participation Rate (%)
Region.1 \		
0	16635535	41.02
South		
1	16545652	40.90
South		
2	15881197	39.18
South		

3	11336911	33.10
South		
4	12988845	36.46
South		

	longitude	latitude
0	15.9129	79.74
1	15.9129	79.74
2	15.9129	79.74
3	15.9129	79.74
4	15.9129	79.74

sample.head(10)

	Region	Date	Frequency	Estimated Unemployment
Rate (%) \				
0	Andhra Pradesh	31-01-2020	M	5.48
1	Andhra Pradesh	29-02-2020	M	5.83
2	Andhra Pradesh	31-03-2020	M	5.79
3	Andhra Pradesh	30-04-2020	M	20.51
4	Andhra Pradesh	31-05-2020	M	17.43
5	Andhra Pradesh	30-06-2020	M	3.31
6	Andhra Pradesh	31-07-2020	M	8.34
7	Andhra Pradesh	31-08-2020	M	6.96
8	Andhra Pradesh	30-09-2020	M	6.40
9	Andhra Pradesh	31-10-2020	M	6.59

	Estimated Employed	Estimated Labour Participation Rate (%)
Region.1 \		
0	16635535	41.02
South		
1	16545652	40.90
South		
2	15881197	39.18
South		
3	11336911	33.10
South		
4	12988845	36.46
South		
5	19805400	47.41

South		
6	15431615	38.91
South		
7	15251776	37.83
South		
8	15220312	37.47
South		
9	15157557	37.34
South		

	longitude	latitude
0	15.9129	79.74
1	15.9129	79.74
2	15.9129	79.74
3	15.9129	79.74
4	15.9129	79.74
5	15.9129	79.74
6	15.9129	79.74
7	15.9129	79.74
8	15.9129	79.74
9	15.9129	79.74

sample.tail()

(%)	Region	Date	Frequency	Estimated Unemployment Rate
262	West Bengal	30-06-2020	M	
7.29				
263	West Bengal	31-07-2020	M	
6.83				
264	West Bengal	31-08-2020	M	
14.87				
265	West Bengal	30-09-2020	M	
9.35				
266	West Bengal	31-10-2020	M	
9.98				

Region.1	Estimated Employed	Estimated Labour Participation Rate (%)
262	30726310	40.39
East		
263	35372506	46.17
East		
264	33298644	47.48
East		
265	35707239	47.73
East		
266	33962549	45.63
East		

	longitude	latitude
262	22.9868	87.855
263	22.9868	87.855
264	22.9868	87.855
265	22.9868	87.855
266	22.9868	87.855

sample.tail(10)

(%)	\	Region	Date	Frequency	Estimated Unemployment Rate
257	West Bengal	31-01-2020	M		
6.94					
258	West Bengal	29-02-2020	M		
4.92					
259	West Bengal	31-03-2020	M		
6.92					
260	West Bengal	30-04-2020	M		
17.41					
261	West Bengal	31-05-2020	M		
17.41					
262	West Bengal	30-06-2020	M		
7.29					
263	West Bengal	31-07-2020	M		
6.83					
264	West Bengal	31-08-2020	M		
14.87					
265	West Bengal	30-09-2020	M		
9.35					
266	West Bengal	31-10-2020	M		
9.98					

Region.1	\	Estimated Employed	Estimated Labour Participation Rate (%)
257	East	35820789	47.35
258	East	36964178	47.74
259	East	35903917	47.27
260	East	26938836	39.90
261	East	28356675	41.92
262	East	30726310	40.39
263	East	35372506	46.17
264	East	33298644	47.48

```

265          35707239          47.73
East
266          33962549          45.63
East

```

```

      longitude  latitude
257    22.9868    87.855
258    22.9868    87.855
259    22.9868    87.855
260    22.9868    87.855
261    22.9868    87.855
262    22.9868    87.855
263    22.9868    87.855
264    22.9868    87.855
265    22.9868    87.855
266    22.9868    87.855

```

```
sample.shape
```

```
(267, 9)
```

```
sample.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 267 entries, 0 to 266
```

```
Data columns (total 9 columns):
```

#	Column	Non-Null Count	Dtype
0	Region	267 non-null	object
1	Date	267 non-null	object
2	Frequency	267 non-null	object
3	Estimated Unemployment Rate (%)	267 non-null	float64
4	Estimated Employed	267 non-null	int64
5	Estimated Labour Participation Rate (%)	267 non-null	float64
6	Region.1	267 non-null	object
7	longitude	267 non-null	float64
8	latitude	267 non-null	float64

```
dtypes: float64(4), int64(1), object(4)
```

```
memory usage: 18.9+ KB
```

```
sample.describe()
```

	Estimated Unemployment Rate (%)	Estimated Employed \
count	267.000000	2.670000e+02
mean	12.236929	1.396211e+07
std	10.803283	1.336632e+07
min	0.500000	1.175420e+05
25%	4.845000	2.838930e+06
50%	9.650000	9.732417e+06
75%	16.755000	2.187869e+07
max	75.850000	5.943376e+07

	Estimated Labour Participation Rate (%)	longitude
latitude		
count	267.000000	267.000000
mean	41.681573	22.826048
std	7.845419	6.270731
min	16.770000	10.850500
25%	37.265000	18.112400
50%	40.390000	23.610200
75%	44.055000	27.278400
max	69.690000	33.778200

sample.isnull().sum()

Region	0
Date	0
Frequency	0
Estimated Unemployment Rate (%)	0
Estimated Employed	0
Estimated Labour Participation Rate (%)	0
Region.1	0
longitude	0
latitude	0

dtype: int64

sample.dtypes

Region	object
Date	object
Frequency	object
Estimated Unemployment Rate (%)	float64
Estimated Employed	int64
Estimated Labour Participation Rate (%)	float64
Region.1	object
longitude	float64
latitude	float64

dtype: object

x=sample['Region']

x

0	Andhra Pradesh
1	Andhra Pradesh

```
2      Andhra Pradesh
3      Andhra Pradesh
4      Andhra Pradesh
...
262     West Bengal
263     West Bengal
264     West Bengal
265     West Bengal
266     West Bengal
Name: Region, Length: 267, dtype: object
```

```
y=sample[' Estimated Unemployment Rate (%)']
```

```
y
```

```
0      5.48
1      5.83
2      5.79
3     20.51
4     17.43
```

```
...
262     7.29
263     6.83
264    14.87
265     9.35
266     9.98
```

```
Name: Estimated Unemployment Rate (%), Length: 267, dtype: float64
```

```
plt.style.use('seaborn-whitegrid')
plt.figure(figsize=(12, 10))
sns.heatmap(sample.corr())
plt.show()
```



```

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Unemployment Rate

```
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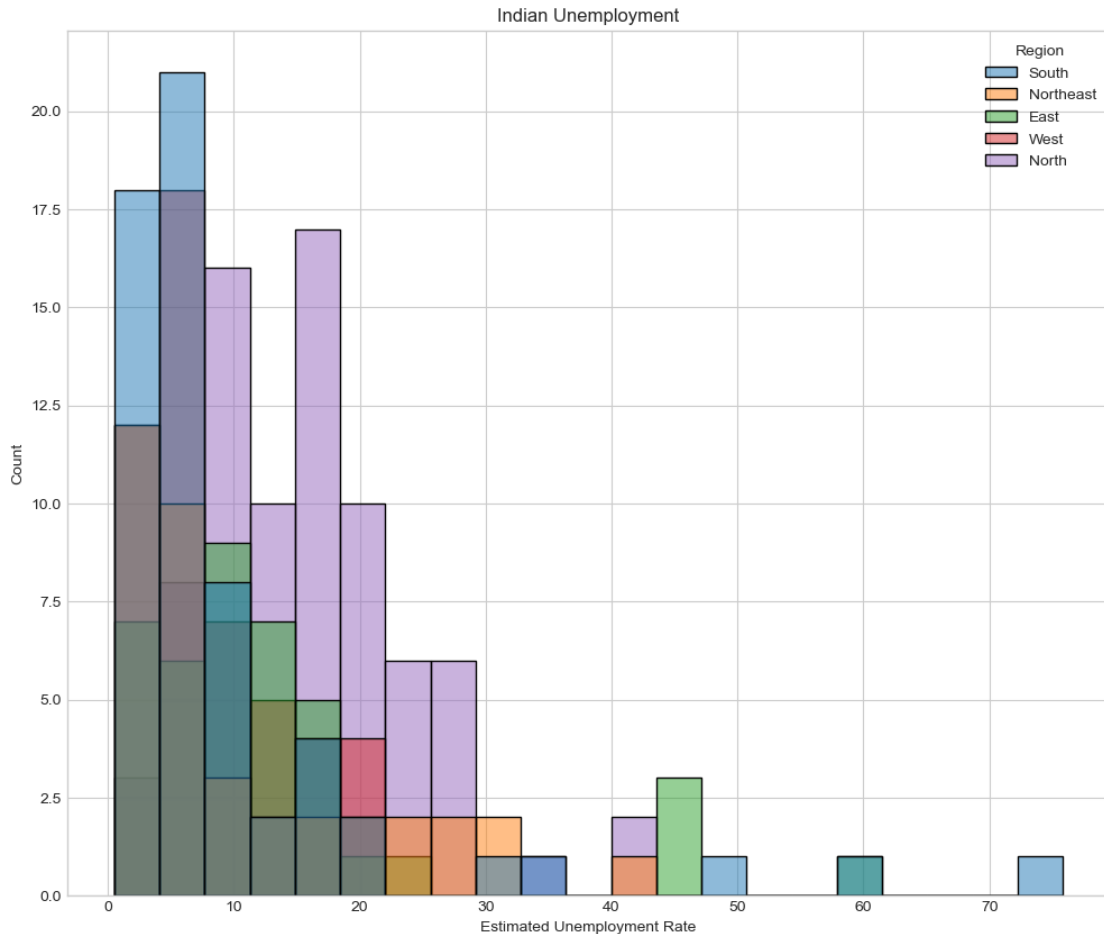
2.Histogram

Unemployment rate according to their region

```

sample.columns= ["States", "Date", "Frequency",
                 "Estimated Unemployment Rate", "Estimated Employed",
                 "Estimated Labour Participation Rate", "Region",
                 "longitude", "latitude"]
plt.figure(figsize=(12, 10))
plt.title("Indian Unemployment")
sns.histplot(x="Estimated Unemployment Rate", hue="Region",
data=sample)
plt.show()

```

3.Scatter plot

Unemployment Analysis according to their states

```
sample.columns= ["States","Date","Frequency",
                 "Estimated Unemployment Rate","Estimated Employed",
                 "Estimated Labour Participation Rate","Region",
                 "longitude","latitude"]
```

```
fg = px.scatter(sample,x,y,color='Region',
                title='Unemployment analysis',template='plotly')
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fg.update_layout(xaxis={'categoryorder':'total descending'})
fg.show()
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Conclusion

Thus , I have analysed the Unemployment rate during COVID-19 by using python programming.

Overall, my unemployment analysis model can provide valuable insights into labor market conditions, identify trends and patterns, forecast future unemployment rates, inform policy decisions, and evaluate the effectiveness of interventions aimed at reducing unemployment.