

```
In [6]: #UNEMPLOYMENT IN INDIA

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

```
In [ ]:
```

```
In [7]: unemp=pd.read_csv('C:\\Users\\kamal\\OneDrive\\Desktop\\cognoriseinfotech\\Unemployment in India.csv')
unemp_11_2020=pd.read_csv('C:\\Users\\kamal\\OneDrive\\Desktop\\cognoriseinfotech\\Unemployment_Rate_upto_11_2020.csv')
unemp.head()
unemp_11_2020.head()
```

Out[7]:

| | Region | Date | Frequency | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) | Region.1 | longitude | latitude |
|---|----------------|------------|-----------|---------------------------------|--------------------|---|----------|-----------|----------|
| 0 | Andhra Pradesh | 31-01-2020 | M | 5.48 | 16635535 | 41.02 | South | 15.9129 | 79.74 |
| 1 | Andhra Pradesh | 29-02-2020 | M | 5.83 | 16545652 | 40.90 | South | 15.9129 | 79.74 |
| 2 | Andhra Pradesh | 31-03-2020 | M | 5.79 | 15881197 | 39.18 | South | 15.9129 | 79.74 |
| 3 | Andhra Pradesh | 30-04-2020 | M | 20.51 | 11336911 | 33.10 | South | 15.9129 | 79.74 |
| 4 | Andhra Pradesh | 31-05-2020 | M | 17.43 | 12988845 | 36.46 | South | 15.9129 | 79.74 |

```
In [8]: unemp.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 7 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   Region                                740 non-null    object
1   Date                                  740 non-null    object
2   Frequency                             740 non-null    object
3   Estimated Unemployment Rate (%)       740 non-null    float64
4   Estimated Employed                    740 non-null    float64
5   Estimated Labour Participation Rate (%) 740 non-null    float64
6   Area                                  740 non-null    object
dtypes: float64(3), object(4)
memory usage: 42.1+ KB
```

```
In [9]: unemp.describe()
```

Out[9]:

| | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) |
|-------|---------------------------------|--------------------|---|
| count | 740.000000 | 7.400000e+02 | 740.000000 |
| mean | 11.787946 | 7.204460e+06 | 42.630122 |
| std | 10.721298 | 8.087988e+06 | 8.111094 |
| min | 0.000000 | 4.942000e+04 | 13.330000 |
| 25% | 4.657500 | 1.190404e+06 | 38.062500 |
| 50% | 8.350000 | 4.744178e+06 | 41.160000 |
| 75% | 15.887500 | 1.127549e+07 | 45.505000 |
| max | 76.740000 | 4.577751e+07 | 72.570000 |

```
In [124]: unemp.tail()
```

Out[124]:

| | Sate | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area |
|-----|-------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|-------|
| 749 | West Bengal | 29-02-2020 | Monthly | 7.55 | 10871168.0 | 44.09 | Urban |
| 750 | West Bengal | 31-03-2020 | Monthly | 6.67 | 10806105.0 | 43.34 | Urban |
| 751 | West Bengal | 30-04-2020 | Monthly | 15.63 | 9299466.0 | 41.20 | Urban |
| 752 | West Bengal | 31-05-2020 | Monthly | 15.22 | 9240903.0 | 40.67 | Urban |
| 753 | West Bengal | 30-06-2020 | Monthly | 9.86 | 9088931.0 | 37.57 | Urban |

```
In [125]: unemp.isna()
```

```
Out[125]:
```

| | Sate | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area |
|-----|-------|-------|-----------|-----------------------------|--------------------|-------------------------------------|-------|
| 0 | False | False | False | False | False | False | False |
| 1 | False | False | False | False | False | False | False |
| 2 | False | False | False | False | False | False | False |
| 3 | False | False | False | False | False | False | False |
| 4 | False | False | False | False | False | False | False |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 749 | False | False | False | False | False | False | False |
| 750 | False | False | False | False | False | False | False |
| 751 | False | False | False | False | False | False | False |
| 752 | False | False | False | False | False | False | False |
| 753 | False | False | False | False | False | False | False |

740 rows × 7 columns

```
In [112]: unemp.isna().sum()
```

```
Out[112]: Sate                28
Date                28
Frequency           28
Estimated Unemployment Rate  28
Estimated Employed    28
Estimated Labour Participation Rate  28
Area                28
dtype: int64
```

```
In [10]: unemp.dropna()
```

```
Out[10]:
```

| | Region | Date | Frequency | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) | Area |
|-----|----------------|------------|-----------|---------------------------------|--------------------|---|-------|
| 0 | Andhra Pradesh | 31-05-2019 | Monthly | 3.65 | 11999139.0 | 43.24 | Rural |
| 1 | Andhra Pradesh | 30-06-2019 | Monthly | 3.05 | 11755881.0 | 42.05 | Rural |
| 2 | Andhra Pradesh | 31-07-2019 | Monthly | 3.75 | 12086707.0 | 43.50 | Rural |
| 3 | Andhra Pradesh | 31-08-2019 | Monthly | 3.32 | 12285693.0 | 43.97 | Rural |
| 4 | Andhra Pradesh | 30-09-2019 | Monthly | 5.17 | 12256762.0 | 44.68 | Rural |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 749 | West Bengal | 29-02-2020 | Monthly | 7.55 | 10871168.0 | 44.09 | Urban |
| 750 | West Bengal | 31-03-2020 | Monthly | 6.67 | 10806105.0 | 43.34 | Urban |
| 751 | West Bengal | 30-04-2020 | Monthly | 15.63 | 9299466.0 | 41.20 | Urban |
| 752 | West Bengal | 31-05-2020 | Monthly | 15.22 | 9240903.0 | 40.67 | Urban |
| 753 | West Bengal | 30-06-2020 | Monthly | 9.86 | 9088931.0 | 37.57 | Urban |

740 rows × 7 columns

```
In [11]: unemp.isna()
```

```
Out[11]:
```

| | Region | Date | Frequency | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) | Area |
|-----|--------|-------|-----------|---------------------------------|--------------------|---|-------|
| 0 | False | False | False | False | False | False | False |
| 1 | False | False | False | False | False | False | False |
| 2 | False | False | False | False | False | False | False |
| 3 | False | False | False | False | False | False | False |
| 4 | False | False | False | False | False | False | False |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 763 | True | True | True | True | True | True | True |
| 764 | True | True | True | True | True | True | True |
| 765 | True | True | True | True | True | True | True |
| 766 | True | True | True | True | True | True | True |
| 767 | True | True | True | True | True | True | True |

768 rows × 7 columns

```
In [13]: unemp=unemp.dropna()
```

```
In [14]: unemp.isna().sum()
```

```
Out[14]: Region          0
         Date            0
         Frequency       0
         Estimated Unemployment Rate (%)  0
         Estimated Employed  0
         Estimated Labour Participation Rate (%)  0
         Area            0
         dtype: int64
```

```
In [15]: unemp.shape
```

```
Out[15]: (740, 7)
```

```
In [ ]:
```

```
In [102]: unemp.shape
```

```
Out[102]: (768, 7)
```

```
In [16]: unemp_11_2020.describe()
```

```
Out[16]:
```

| | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) | longitude | latitude |
|-------|---------------------------------|--------------------|---|------------|------------|
| count | 267.000000 | 2.670000e+02 | 267.000000 | 267.000000 | 267.000000 |
| mean | 12.236929 | 1.396211e+07 | 41.681573 | 22.826048 | 80.532425 |
| std | 10.803283 | 1.336632e+07 | 7.845419 | 6.270731 | 5.831738 |
| min | 0.500000 | 1.175420e+05 | 16.770000 | 10.850500 | 71.192400 |
| 25% | 4.845000 | 2.838930e+06 | 37.265000 | 18.112400 | 76.085600 |
| 50% | 9.650000 | 9.732417e+06 | 40.390000 | 23.610200 | 79.019300 |
| 75% | 16.755000 | 2.187869e+07 | 44.055000 | 27.278400 | 85.279900 |
| max | 75.850000 | 5.943376e+07 | 69.690000 | 33.778200 | 92.937600 |

```
In [ ]:
```

```
In [ ]:
```

```
In [65]: #state with lowest unemployment
         unemp['State'].value_counts().idxmin()
```

```
Out[65]: 'Chandigarh'
```

```
In [104]: unemp_11_2020.shape
```

```
Out[104]: (267, 9)
```

```
In [126]: unemp_11_2020.isna().sum()
```

```
Out[126]: State          0
         Date            0
         Frequency       0
         Estimated Unemployment Rate      0
         Estimated Employed      0
         Estimated Labour Participation Rate  0
         Region          0
         longitude        0
         latitude         0
         dtype: int64
```

```
In [18]: unemp_11_2020.describe()
```

```
Out[18]:
```

| | Estimated Unemployment Rate (%) | Estimated Employed | Estimated Labour Participation Rate (%) | longitude | latitude |
|-------|---------------------------------|--------------------|---|------------|------------|
| count | 267.000000 | 2.670000e+02 | 267.000000 | 267.000000 | 267.000000 |
| mean | 12.236929 | 1.396211e+07 | 41.681573 | 22.826048 | 80.532425 |
| std | 10.803283 | 1.336632e+07 | 7.845419 | 6.270731 | 5.831738 |
| min | 0.500000 | 1.175420e+05 | 16.770000 | 10.850500 | 71.192400 |
| 25% | 4.845000 | 2.838930e+06 | 37.265000 | 18.112400 | 76.085600 |
| 50% | 9.650000 | 9.732417e+06 | 40.390000 | 23.610200 | 79.019300 |
| 75% | 16.755000 | 2.187869e+07 | 44.055000 | 27.278400 | 85.279900 |
| max | 75.850000 | 5.943376e+07 | 69.690000 | 33.778200 | 92.937600 |

```
In [27]: 'Estimated Unemployment Rate','Estimated Employed','Estimated Labour Participation Rate','Area']
frequency','Estimated Unemployment Rate','Estimated Employed','Estimated Labour Participation Rate','Region','longitude','latitu
```

```
In [19]: unemp.columns
```

```
Out[19]: Index(['Region', ' Date', ' Frequency', ' Estimated Unemployment Rate (%)',
              ' Estimated Employed', ' Estimated Labour Participation Rate (%)',
              'Area'],
              dtype='object')
```

```
In [28]: unemp_11_2020.columns
```

```
Out[28]: Index(['State', 'Date', 'Frequency', 'Estimated Unemployment Rate',
              'Estimated Employed', 'Estimated Labour Participation Rate', 'Region',
              'longitude', 'latitude'],
              dtype='object')
```

```
In [155]: unemp.head(2)
```

```
Out[155]:
```

| | State | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area |
|---|----------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|-------|
| 0 | Andhra Pradesh | 31-05-2019 | Monthly | 3.65 | 11999139.0 | 43.24 | Rural |
| 1 | Andhra Pradesh | 30-06-2019 | Monthly | 3.05 | 11755881.0 | 42.05 | Rural |

```
In [29]: unemp_11_2020.head()
```

```
Out[29]:
```

| | State | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Region | longitude | latitude |
|---|----------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|--------|-----------|----------|
| 0 | Andhra Pradesh | 31-01-2020 | M | 5.48 | 16635535 | 41.02 | South | 15.9129 | 79.74 |
| 1 | Andhra Pradesh | 29-02-2020 | M | 5.83 | 16545652 | 40.90 | South | 15.9129 | 79.74 |
| 2 | Andhra Pradesh | 31-03-2020 | M | 5.79 | 15881197 | 39.18 | South | 15.9129 | 79.74 |
| 3 | Andhra Pradesh | 30-04-2020 | M | 20.51 | 11336911 | 33.10 | South | 15.9129 | 79.74 |
| 4 | Andhra Pradesh | 31-05-2020 | M | 17.43 | 12988845 | 36.46 | South | 15.9129 | 79.74 |

```
In [23]: unemp_11_2020['Region'].value_counts()
```

```
Out[23]: Region
Andhra Pradesh    10
Assam             10
Uttarakhand       10
Uttar Pradesh     10
Tripura           10
Telangana         10
Tamil Nadu       10
Rajasthan         10
Punjab            10
Puducherry        10
Odisha            10
Meghalaya         10
Maharashtra       10
Madhya Pradesh    10
Kerala            10
Karnataka         10
Jharkhand         10
Himachal Pradesh  10
Haryana           10
Gujarat           10
Goa               10
Delhi             10
Chhattisgarh      10
Bihar            10
West Bengal       10
Jammu & Kashmir    9
Sikkim            8
Name: count, dtype: int64
```

Type *Markdown* and LaTeX: α^2

```
In [157]: unemp['State'].value_counts()
```

```
Out[157]: State
Andhra Pradesh    28
Kerala            28
West Bengal       28
Uttar Pradesh     28
Tripura           28
Telangana          28
Tamil Nadu        28
Rajasthan          28
Punjab            28
Odisha            28
Madhya Pradesh    28
Maharashtra       28
Karnataka          28
Jharkhand          28
Himachal Pradesh  28
Haryana           28
Gujarat           28
Delhi             28
Chhattisgarh      28
Bihar            28
Meghalaya         27
Uttarakhand       27
Assam             26
Puducherry        26
Goa               24
Jammu & Kashmir   21
Sikkim            17
Chandigarh        12
Name: count, dtype: int64
```

```
In [158]: unemp_11_2020['State'].value_counts().idxmin()
```

```
Out[158]: 'Sikkim'
```

```
In [30]: unemp_11_2020['Region'].value_counts().idxmax()
```

```
Out[30]: 'North'
```

```
In [160]: unemp['State'].value_counts().idxmax()
```

```
Out[160]: 'Andhra Pradesh'
```

```
In [161]: unemp['State'].value_counts().idxmin()
```

```
Out[161]: 'Chandigarh'
```

```
In [44]: import datetime as dt #this Line imports the datetime module ,which provides classes and functions for working with dates and
import calendar #this Line imports calendar module,which includes various functions related to calendars,such as retriving mo
unemp['Date']=pd.to_datetime(unemp['Date'], dayfirst=True)
unemp['month_int']=unemp['Date'].dt.month
unemp['month']=unemp['month_int'].apply(lambda x: calendar.month_abbr[x])
```

```
In [45]: unemp_11_2020['Date']=pd.to_datetime(unemp_11_2020['Date'], dayfirst=True)
unemp_11_2020['month_int']=unemp_11_2020['Date'].dt.month
unemp_11_2020['month']=unemp_11_2020['month_int'].apply(lambda x: calendar.month_abbr[x])
```

```
In [46]: #month with Lowest unemployment
unemp['month'].value_counts().idxmin()
```

```
Out[46]: 'Apr'
```

```
In [47]: #month with highest unemployment
unemp['month'].value_counts().idxmax()
```

```
Out[47]: 'May'
```

```
In [48]: unemp_11_2020['month'].value_counts().idxmin()
```

```
Out[48]: 'Jan'
```

```
In [49]: unemp_11_2020['month'].value_counts().idxmax()
```

```
Out[49]: 'Mar'
```

```
In [50]: unemp.head(3)
```

Out[50]:

| | State | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area | month_int | month |
|---|----------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|-------|-----------|-------|
| 0 | Andhra Pradesh | 2019-05-31 | Monthly | 3.65 | 11999139.0 | 43.24 | Rural | 5 | May |
| 1 | Andhra Pradesh | 2019-06-30 | Monthly | 3.05 | 11755881.0 | 42.05 | Rural | 6 | Jun |
| 2 | Andhra Pradesh | 2019-07-31 | Monthly | 3.75 | 12086707.0 | 43.50 | Rural | 7 | Jul |

```
In [51]: unemp_11_2020.head(3)
```

Out[51]:

| | State | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Region | longitude | latitude | month_int | month |
|---|----------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|--------|-----------|----------|-----------|-------|
| 0 | Andhra Pradesh | 2020-01-31 | M | 5.48 | 16635535 | 41.02 | South | 15.9129 | 79.74 | 1 | Jan |
| 1 | Andhra Pradesh | 2020-02-29 | M | 5.83 | 16545652 | 40.90 | South | 15.9129 | 79.74 | 2 | Feb |
| 2 | Andhra Pradesh | 2020-03-31 | M | 5.79 | 15881197 | 39.18 | South | 15.9129 | 79.74 | 3 | Mar |

```
In [187]: unemp.drop([])
```

Out[187]:

| | State | Date | Frequency | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area | month_int | month |
|-----|----------------|------------|-----------|-----------------------------|--------------------|-------------------------------------|-------|-----------|-------|
| 0 | Andhra Pradesh | 2019-05-31 | Monthly | 3.65 | 11999139.0 | 43.24 | Rural | 5 | May |
| 1 | Andhra Pradesh | 2019-06-30 | Monthly | 3.05 | 11755881.0 | 42.05 | Rural | 6 | Jun |
| 3 | Andhra Pradesh | 2019-08-31 | Monthly | 3.32 | 12285693.0 | 43.97 | Rural | 8 | Aug |
| 4 | Andhra Pradesh | 2019-09-30 | Monthly | 5.17 | 12256762.0 | 44.68 | Rural | 9 | Sep |
| 5 | Andhra Pradesh | 2019-10-31 | Monthly | 3.52 | 12017412.0 | 43.01 | Rural | 10 | Oct |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 749 | West Bengal | 2020-02-29 | Monthly | 7.55 | 10871168.0 | 44.09 | Urban | 2 | Feb |
| 750 | West Bengal | 2020-03-31 | Monthly | 6.67 | 10806105.0 | 43.34 | Urban | 3 | Mar |
| 751 | West Bengal | 2020-04-30 | Monthly | 15.63 | 9299466.0 | 41.20 | Urban | 4 | Apr |
| 752 | West Bengal | 2020-05-31 | Monthly | 15.22 | 9240903.0 | 40.67 | Urban | 5 | May |
| 753 | West Bengal | 2020-06-30 | Monthly | 9.86 | 9088931.0 | 37.57 | Urban | 6 | Jun |

739 rows × 9 columns

```
In [52]: unemp.drop(columns=['Frequency', 'month_int'])
```

Out[52]:

| | State | Date | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Area | month |
|-----|----------------|------------|-----------------------------|--------------------|-------------------------------------|-------|-------|
| 0 | Andhra Pradesh | 2019-05-31 | 3.65 | 11999139.0 | 43.24 | Rural | May |
| 1 | Andhra Pradesh | 2019-06-30 | 3.05 | 11755881.0 | 42.05 | Rural | Jun |
| 2 | Andhra Pradesh | 2019-07-31 | 3.75 | 12086707.0 | 43.50 | Rural | Jul |
| 3 | Andhra Pradesh | 2019-08-31 | 3.32 | 12285693.0 | 43.97 | Rural | Aug |
| 4 | Andhra Pradesh | 2019-09-30 | 5.17 | 12256762.0 | 44.68 | Rural | Sep |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 749 | West Bengal | 2020-02-29 | 7.55 | 10871168.0 | 44.09 | Urban | Feb |
| 750 | West Bengal | 2020-03-31 | 6.67 | 10806105.0 | 43.34 | Urban | Mar |
| 751 | West Bengal | 2020-04-30 | 15.63 | 9299466.0 | 41.20 | Urban | Apr |
| 752 | West Bengal | 2020-05-31 | 15.22 | 9240903.0 | 40.67 | Urban | May |
| 753 | West Bengal | 2020-06-30 | 9.86 | 9088931.0 | 37.57 | Urban | Jun |

740 rows × 7 columns

```
In [57]: unemp_11_2020.drop(columns=['Frequency', 'month_int'])
```

Out[57]:

| | State | Date | Estimated Unemployment Rate | Estimated Employed | Estimated Labour Participation Rate | Region | longitude | latitude | month |
|-----|----------------|------------|-----------------------------|--------------------|-------------------------------------|--------|-----------|----------|-------|
| 0 | Andhra Pradesh | 2020-01-31 | 5.48 | 16635535 | 41.02 | South | 15.9129 | 79.740 | Jan |
| 1 | Andhra Pradesh | 2020-02-29 | 5.83 | 16545652 | 40.90 | South | 15.9129 | 79.740 | Feb |
| 2 | Andhra Pradesh | 2020-03-31 | 5.79 | 15881197 | 39.18 | South | 15.9129 | 79.740 | Mar |
| 3 | Andhra Pradesh | 2020-04-30 | 20.51 | 11336911 | 33.10 | South | 15.9129 | 79.740 | Apr |
| 4 | Andhra Pradesh | 2020-05-31 | 17.43 | 12988845 | 36.46 | South | 15.9129 | 79.740 | May |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 262 | West Bengal | 2020-06-30 | 7.29 | 30726310 | 40.39 | East | 22.9868 | 87.855 | Jun |
| 263 | West Bengal | 2020-07-31 | 6.83 | 35372506 | 46.17 | East | 22.9868 | 87.855 | Jul |
| 264 | West Bengal | 2020-08-31 | 14.87 | 33298644 | 47.48 | East | 22.9868 | 87.855 | Aug |
| 265 | West Bengal | 2020-09-30 | 9.35 | 35707239 | 47.73 | East | 22.9868 | 87.855 | Sep |
| 266 | West Bengal | 2020-10-31 | 9.98 | 33962549 | 45.63 | East | 22.9868 | 87.855 | Oct |

267 rows × 9 columns

```
In [35]: tates with highest unemployment
unemp[['State', 'Estimated Unemployment Rate']].groupby('State').sum().sort_values('Estimated Unemployment Rate', ascending=False)
```

```
In [56]: unemp_11_2020[['State', 'Estimated Unemployment Rate']].groupby('State').sum().sort_values('Estimated Unemployment Rate', ascending=False)
```

```
In [37]: unemp1.head(10)
```

Out[37]:

| | Estimated Unemployment Rate |
|------------------|-----------------------------|
| State | |
| Tripura | 793.81 |
| Haryana | 735.93 |
| Jharkhand | 576.38 |
| Bihar | 529.71 |
| Himachal Pradesh | 519.13 |
| Delhi | 461.87 |
| Rajasthan | 393.63 |
| Uttar Pradesh | 351.44 |
| Jammu & Kashmir | 339.96 |
| Punjab | 336.87 |

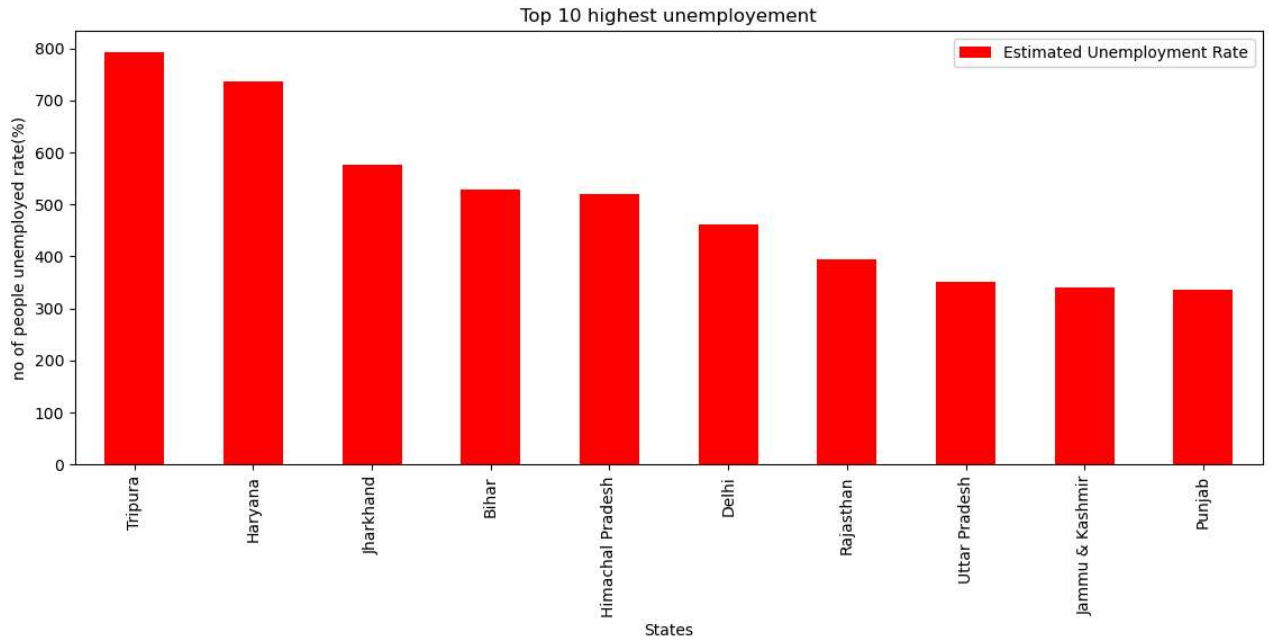
```
In [38]: unemp_11_20201.head(10)
```

Out[38]:

| | Estimated Unemployment Rate |
|------------------|-----------------------------|
| State | |
| Haryana | 274.77 |
| Tripura | 250.55 |
| Jharkhand | 195.39 |
| Bihar | 194.71 |
| Delhi | 184.14 |
| Puducherry | 179.42 |
| Himachal Pradesh | 160.65 |
| Rajasthan | 158.68 |
| Jammu & Kashmir | 148.30 |
| Tamil Nadu | 121.87 |

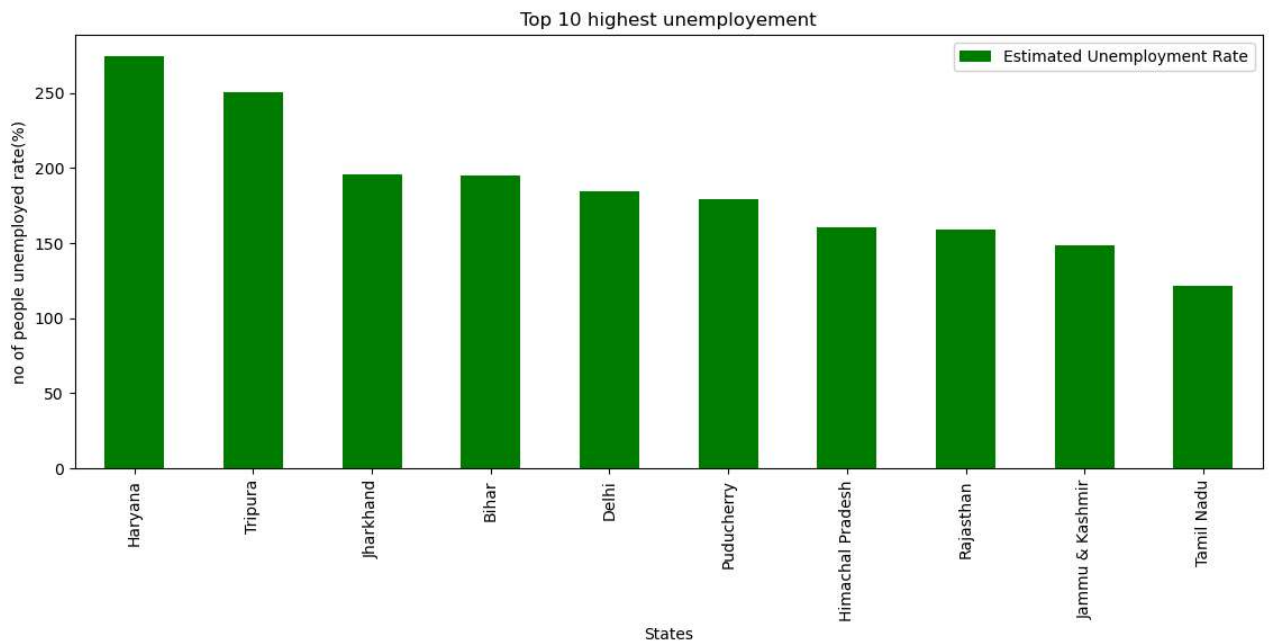
```
In [228]: #Visualization
fig=plt.figure()
ax0=fig.add_subplot(1,2,1)
c=(['red','blues','#98fc03','#fcf003','#fcf803','#fcd303','#fca503','#548580','#d3fc03','#54856f'])
unemp1[:10].plot(kind='bar',color='red', figsize=(30,5), ax=ax0)
ax0.set_title('Top 10 highest unemployment')
ax0.set_xlabel('States')
ax0.set_ylabel('no of people unemployed rate(%))')
```

Out[228]: Text(0, 0.5, 'no of people unemployed rate(%))')



```
In [39]: fig=plt.figure()
ax0=fig.add_subplot(1,2,2)
#c=(['red','blues','#98fc03','#fcf003','#fcf803','#fcd303','#fca503','#548580','#d3fc03','#54856f'])
unemp_11_20201[:10].plot(kind='bar',color='green', figsize=(30,5), ax=ax0)
ax0.set_title('Top 10 highest unemployment')
ax0.set_xlabel('States')
ax0.set_ylabel('no of people unemployed rate(%))')
```

Out[39]: Text(0, 0.5, 'no of people unemployed rate(%))')



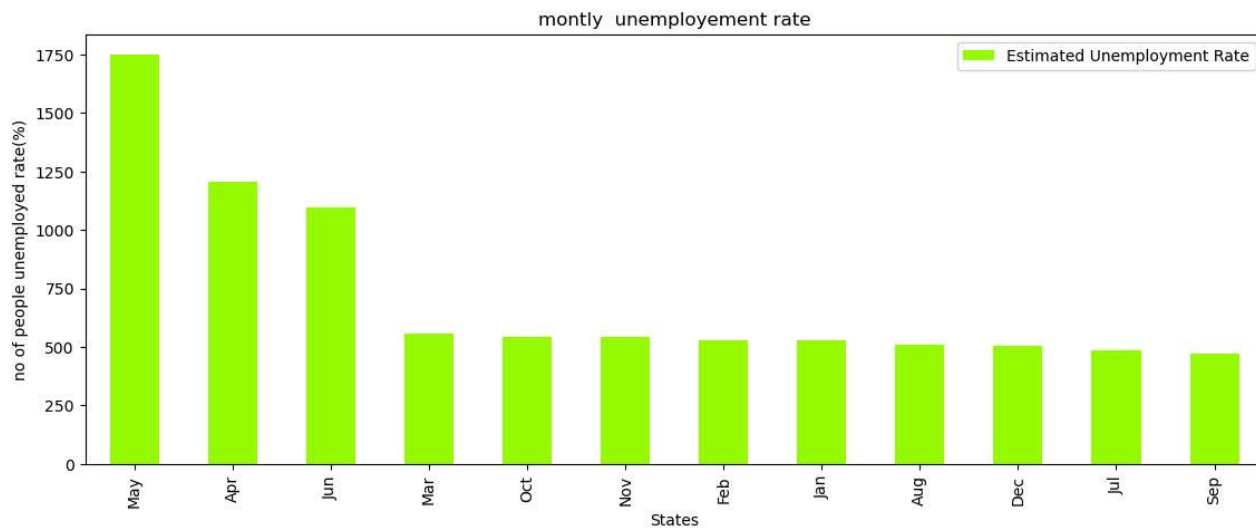

```
In [54]: unemp2=unemp[['month', 'Estimated Unemployment Rate']].groupby('month').sum().sort_values('Estimated Unemployment Rate', ascending=True)
unemp2.head(12)
```

Out[54]:

| Estimated Unemployment Rate | |
|-----------------------------|---------|
| month | |
| May | 1747.85 |
| Apr | 1205.72 |
| Jun | 1097.56 |
| Mar | 556.43 |
| Oct | 544.55 |
| Nov | 542.76 |
| Feb | 528.13 |
| Jan | 527.39 |
| Aug | 510.81 |
| Dec | 503.36 |
| Jul | 487.83 |
| Sep | 470.69 |

```
In [266]: fig=plt.figure()
ax0=fig.add_subplot(1,2,1)
#c=['red', 'blues', '#98fc03', '#fcf003', '#fcf803', '#fcd303', '#fca503', '#548580', '#d3fc03', '#54856f']
unemp2[:12].plot(kind='bar', color='#98fc03', figsize=(30,5), ax=ax0)
ax0.set_title('monthly unemployment rate')
ax0.set_xlabel('States')
ax0.set_ylabel('no of people unemployed rate(%))')
```

Out[266]: Text(0, 0.5, 'no of people unemployed rate(%))')



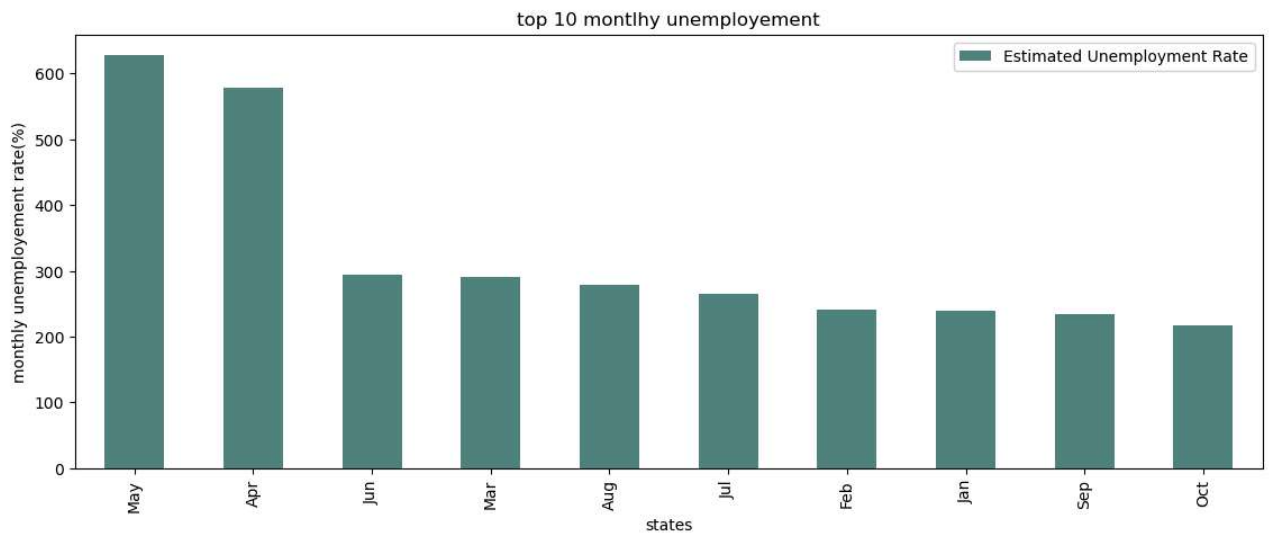
```
In [58]: unemp2_11_2020=unemp_11_2020[['month', 'Estimated Unemployment Rate']].groupby('month').sum().sort_values('Estimated Unemployment Rate', ascending=True)
unemp2_11_2020.head(12)
```

Out[58]:

| Estimated Unemployment Rate | |
|-----------------------------|--------|
| month | |
| May | 627.60 |
| Apr | 578.14 |
| Jun | 294.60 |
| Mar | 291.13 |
| Aug | 278.46 |
| Jul | 265.53 |
| Feb | 240.92 |
| Jan | 239.11 |
| Sep | 235.06 |
| Oct | 216.71 |

```
In [59]: fig=plt.figure()
ax0=fig.add_subplot(1,2,1)
unemp2_11_2020[:12].plot(kind='bar',color='#548580',figsize=(30,5),ax=ax0)
ax0.set_title('top 10 montlhy unemployment')
ax0.set_xlabel('states')
ax0.set_ylabel('monthly unemployment rate(%)')
#c
```

Out[59]: Text(0, 0.5, 'monthly unemployment rate(%)')



```
In [60]: import plotly.express as px
```

```
In [61]: import plotly.graph_objects as go
```

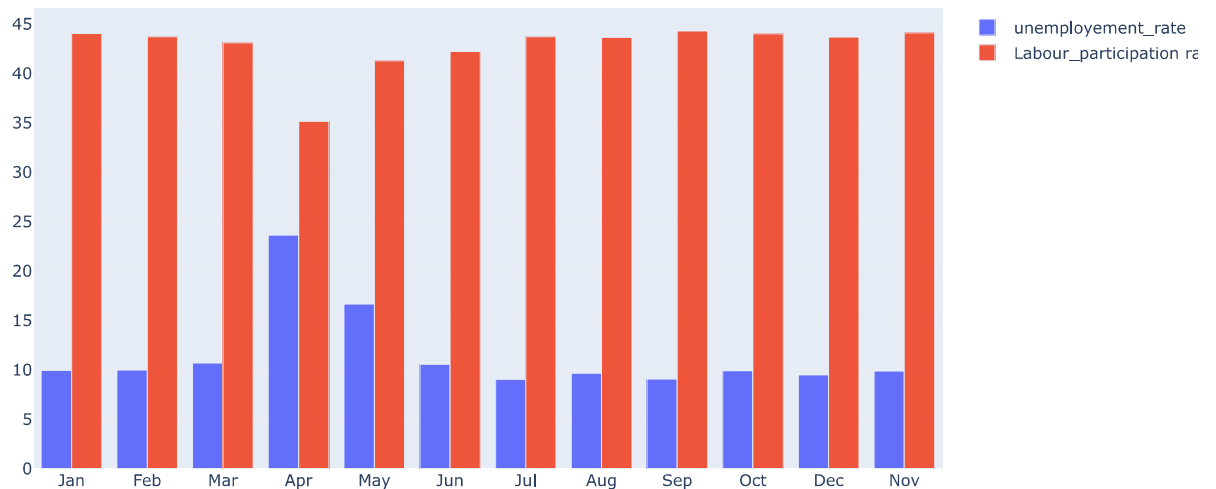
```
In [ ]:
```

```
In [62]: unemp_EEE=unemp.groupby(['month'])[['Estimated Unemployment Rate','Estimated Employed','Estimated Labour Participation Rate']
unemp_EEE=pd.DataFrame(unemp_EEE).reset_index()
month=unemp_EEE.month
unemployment_rate=unemp_EEE["Estimated Unemployment Rate"]
Labour_participation=unemp_EEE['Estimated Labour Participation Rate']

fig=go.Figure()

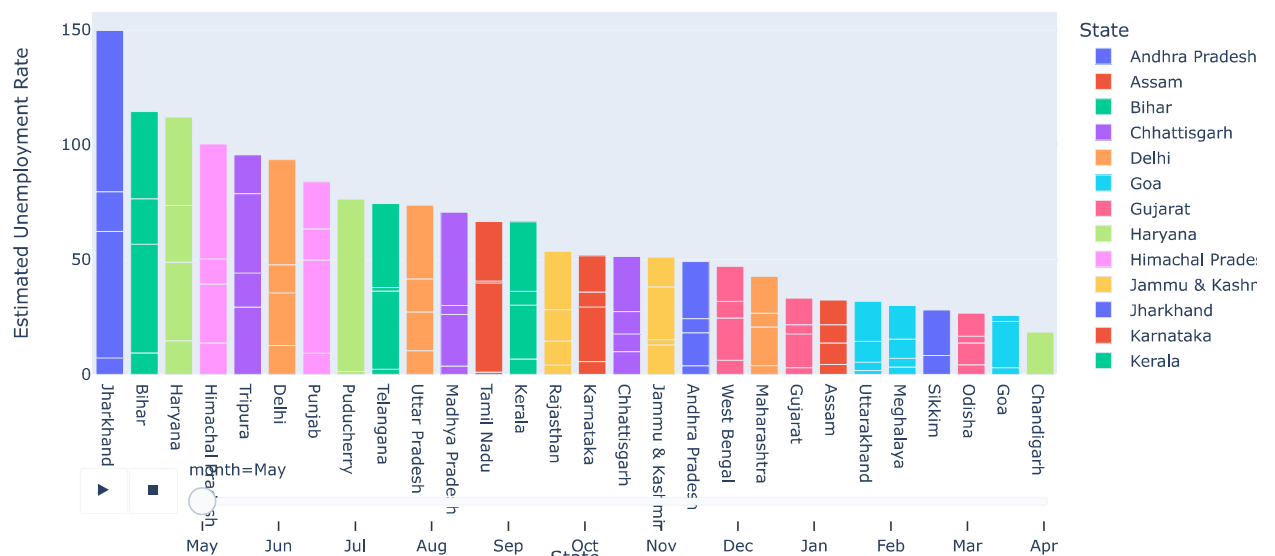
fig.add_trace(go.Bar(x = month, y = unemployment_rate,name = 'unemployment_rate'))
fig.add_trace(go.Bar(x = month, y = Labour_participation, name='Labour_participation rate'))
fig.update_layout(title='unemployment_rate and Labour_participation rate',
                  xaxis={'categoryorder':'array','categoryarray':['Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct',
fig.show()
```

unemployment_rate and Labour_participation rate



```
In [63]: fig=px.bar(unemp, x='State', y='Estimated Unemployment Rate', animation_frame='month',color='State',
                  title='unemployment rate(State)')
fig.update_layout(xaxis={'categoryorder':'total descending'})
fig.layout.updatemenus[0].buttons[0].args[1]['frame']['duration']=2000
fig.show()
```

unemployment rate(State)



In []:

