

UNEMPLOYMENT RATE IN INDIA DURING COVID 19

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Inspiration To Analyze Data:-

After seeing my Mother without a job,I inspired with her struggle to analyze how many people were been suffered without employment during Pandemic.Which state has effected the most, and how those states were being improved after lockdown.

Objective Of Analysis Is:-

- ❖ To know the covid-19 impact on job market.
- ❖ Which state survive and which state has more impact on

This dataset contains the unemployment rate of all the states in India:-

- ❖ States = states in India
- ❖ Date = date which the unemployment rate observed
- ❖ Frequency = measuring frequency (Monthly)
- ❖ Estimated Unemployment Rate (%) = percentage of people unemployed in each States of India
- ❖ Estimated Employed = Number of people employed
- ❖ Estimated Labour Participation Rate (%) = The labour force participation rate is the portion of the working population in the 16-64 years' age group in the economy currently in employment or seeking employment.

Description:-

It is not wrong to say that the corona virus is a ‘Black Swan Event- a term used to describe unpredictable events that have severe impacts worldwide. The economic impact of the pandemic has severe consequences on the Indian economy by dragging them into recession. This paper attempts to analyze the impact of the Covid-19 pandemic on unemployment in India, considering the secondary data collected through websites, newspapers, journals, and reports. For the past few years, the Indian economy is experiencing jobless growth. The existence of the unemployment crisis has been going on for a long time. Nevertheless, it was accomplished in developed countries during the great depression, while it was seen after the Second World War in developing countries.

The rate of unemployment in India has risen rapidly over the past few years, despite the boost in the Indian economy. Due to the Covid-19 pandemic lockdown, as most private enterprises have fired their employees, the economy was further exacerbated by the unemployment crisis. The informal sector is the most affected by the lockdown, as construction works were closed, and most workers lost their jobs.



Data and method:-

This study aims to analyze the impact of the Covid-19 Pandemic on unemployment in India. Secondary sources are the main database. The data have been extracted from the CMIE. A comparison has been made between the unemployment rates before and after the pandemic, with visualization using plot graphs.

Index:-

- ❖ Importing libraries.
- ❖ Data Import.
- ❖ Stats
- ❖ Data Exploratory Analysis.
- ❖ Impact of Lockdown on States Estimated Employed.

Analyzation of Data:-

Based on the below dataset , the process of analyzation is performed. Plotting of the data is depended on various measures. Data tells about what are the percentages of the employment and unemployment rate in various states of India. Period of Pandemic is the very crucial thing that everyone should have faced ,everyone from animal to human has suffered due to this. Employment has been a significant worry for policymakers and the government in recent years. By raising the economy's growth rate and

creating new jobs, each plan aims to eliminate unemployment. Most economists believe that a higher rate of economic growth can alleviate the backlog of unemployed workers and create new jobs, although this theory has yet to be proven (Dobriyal, 1970). Despite being the world's sixth-largest nominal GDP economy and the third-largest in terms of purchasing power parity, it remains by and large in the grip of a high unemployment rate.

Indian economy had recovered from a significant downturn in April and May 2020 when the labor participation rate decreased, unemployment soared, and there was much stress, many jobs were lost during that period.

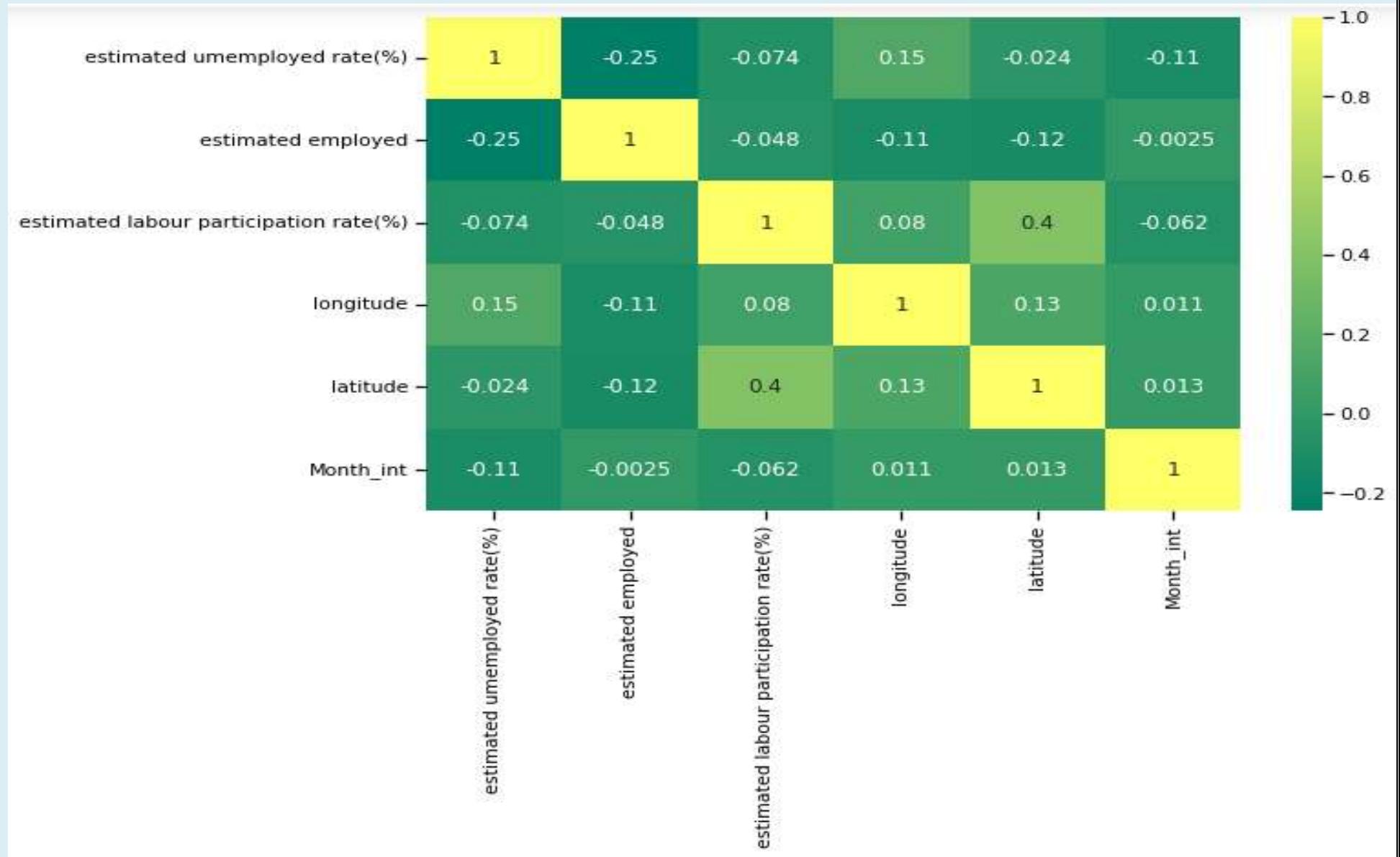
Roughly 126 million employment were destroyed when the epidemic struck in April 2020, which is a lot, and about 90 million of those positions were more daily wage earners (CMIE).

	state	Date	frequency	estimated unemployed 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	79.740
1	Andhra Pradesh	29-02-2020	M	5.83	16545652	40.90	South	15.9129	79.740
2	Andhra Pradesh	31-03-2020	M	5.79	15881197	39.18	South	15.9129	79.740
3	Andhra Pradesh	30-04-2020	M	20.51	11336911	33.10	South	15.9129	79.740
4	Andhra Pradesh	31-05-2020	M	17.43	12988845	36.46	South	15.9129	79.740
...
262	West Bengal	30-06-2020	M	7.29	30726310	40.39	East	22.9868	87.855
263	West Bengal	31-07-2020	M	6.83	35372506	46.17	East	22.9868	87.855
264	West Bengal	31-08-2020	M	14.87	33298644	47.48	East	22.9868	87.855
265	West Bengal	30-09-2020	M	9.35	35707239	47.73	East	22.9868	87.855
266	West Bengal	31-10-2020	M	9.98	33962549	45.63	East	22.9868	87.855

267 rows × 9 columns

A daily-wage earner can get work by going out to the curb, going to a construction site, or pulling a cart to sell his wares and finding work in those places. There was no way for the daily-wage workers to earn a living or keep their jobs after the nation went into lockdown on 24 March 2020, with one of the most strict preventative and containment measures against the epidemic. After the opening of lockdown, all of them pushed up their cards and started seeking for hiring opportunities again. So these are the daily-wage earners who can in a sense move in and out of the employment fairly casually. What happened though is their income-earning propensities declined, and so are the job opportunities for them. Many persons who had formal occupations before the pandemic returned to work in an informal capacity, indicating a rise in informality following the epidemic (Kesar et al., 2021). Even more worrisome, approximately 73 million salaried employees have been affected by Covid-19 (CMIE).

Figure:-1 Here we goes through a Heat Map that to give a visual representation of different parameters .



India's unemployment rate decreased to 11% in June 2020, from a record high of 23.5% in April and May 2020, when the closed businesses reopened after weeks of Covid-19 pandemic lockdown (Table1). The Report of CMIE says the unemployment rate in India has risen to 29% since the country went into lockdown in (March 2020). Many businesses have been forced to close as a result of the nationwide shutdown to contain the coronavirus outbreak (Nicola et al., 2020).

Figure:-2 The below box shows unemployment rate in each state in India

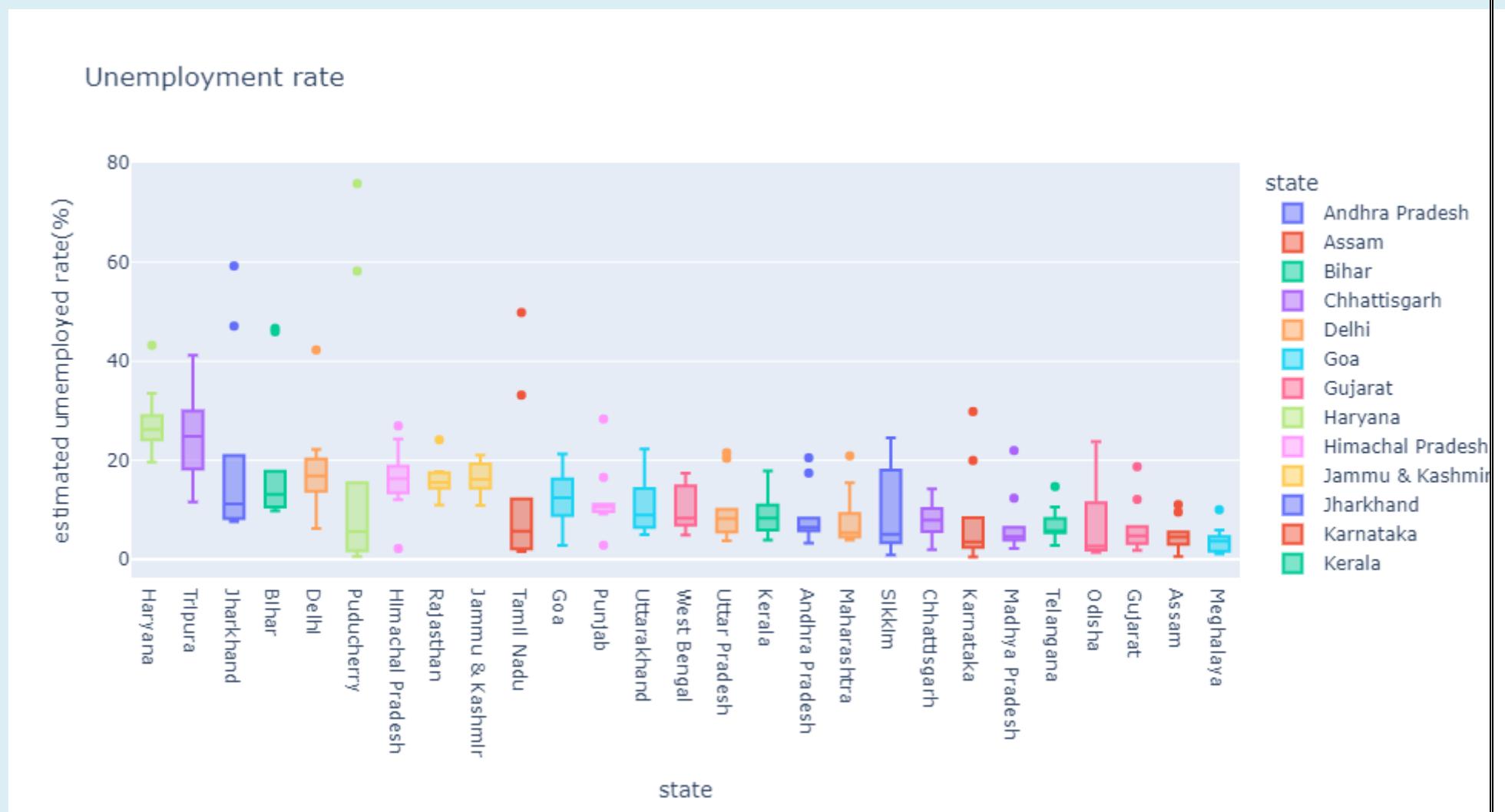
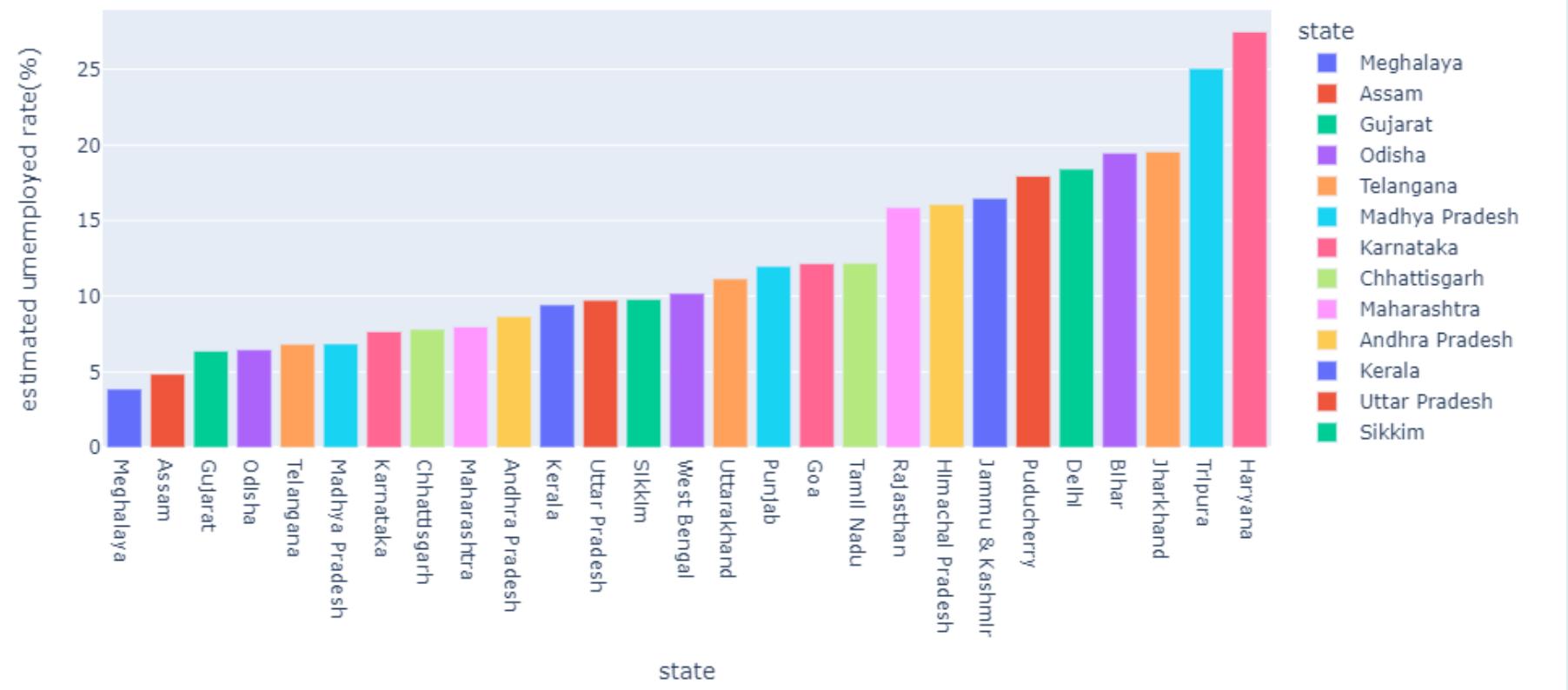


Figure:-3 Here the scatter matrix represents the correlation between the estimated unemployed rate ,estimated employed,estimated labour participation rate.



Figure:-4 Here the Bar graph shows that Avarage Unemployment rate in each State.

Average Unemployment Rate in each state



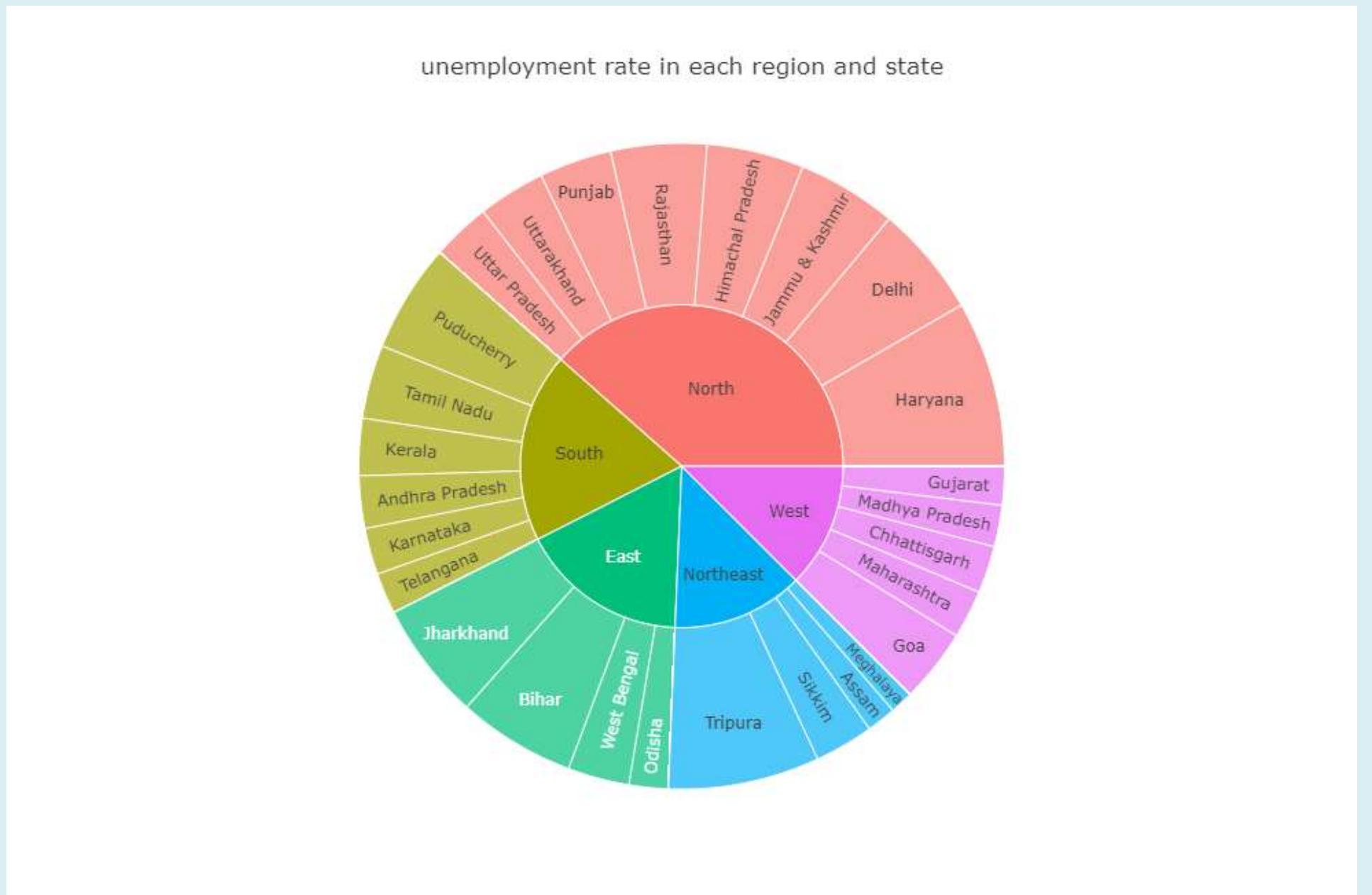
Unemployment was also shockingly high in metropolitan areas of India. A spike in urban India's unemployment rate of 30 and 31% occurred during the first and second weeks of the shutdown respectively. However, the percentage drops dramatically to 23% and 25% over the next two weeks. Urban unemployment has fallen dramatically, yet it is still quite high.

Figure:-5 Unemployment rate across region from Jan.2020 to Oct.2020.



The unemployment rate in March was 8.8%, the highest since the August 2016 demonetization, according to a recent CMIE Survey. The unemployment rate was 9.59% in August 2016 (Business Today 2020)2. When the Indian economy was growing at a jobless growth, this jobless growth level suggests that something was fundamentally wrong with policies and overall structure. The deterioration of the situation is partly long-term neglect of the employment issue in policy making and the consequence such as demonetization, Goods and Services Tax (GST) implementation, and paradigm shift of the Indian economy directly from agriculture to the service sector without much development in the industrial sector. In 2016-17 Indian economy was booming and it earned the tag of fastest-growing economy in the world by keeping impressive growth numbers for successive quarters but job creation remains a top concern.

Figure:-6 Here the Pie chart shows the unemployment rate in each region and state.



Impact of Lockdown on States Estimated Employed

On 24 March 2020, the Government of India under Prime Minister Narendra Modi ordered a nationwide lockdown for 21 days. It has brought global growth to a halt for the past two months. The most significant impact of this tragedy was the unprecedented loss of unemployment in all sectors of the economy. Following the loss of nearly 8 million workers in March, most of them in the last week since the country-wide lockdown was imposed, the CMIE dated reveals that 12.8 crore employment loss in April 2020. Roughly one-third of all workers were laid off in a single month, relative to last year

Figure:-7 Impact of lockdown on employment across regions from jan 2020 to oct 2020

Impact of lockdown on employment across regions



One of the most visible and devastating consequences of this job-loss crisis was that migrant workers began to return to their homes. The surge of reverse migration was one of the straightforward consequences of the lockdown. In this process, at least 8700 people have died many of them were migrants (Indian Express, 2020)⁴. Many citizens expected that if the lockdown were lifted gradually, the economy would improve so that jobs would return. In fact, the employment situation is not optimistic.

Percentage change in unemployment rate:-

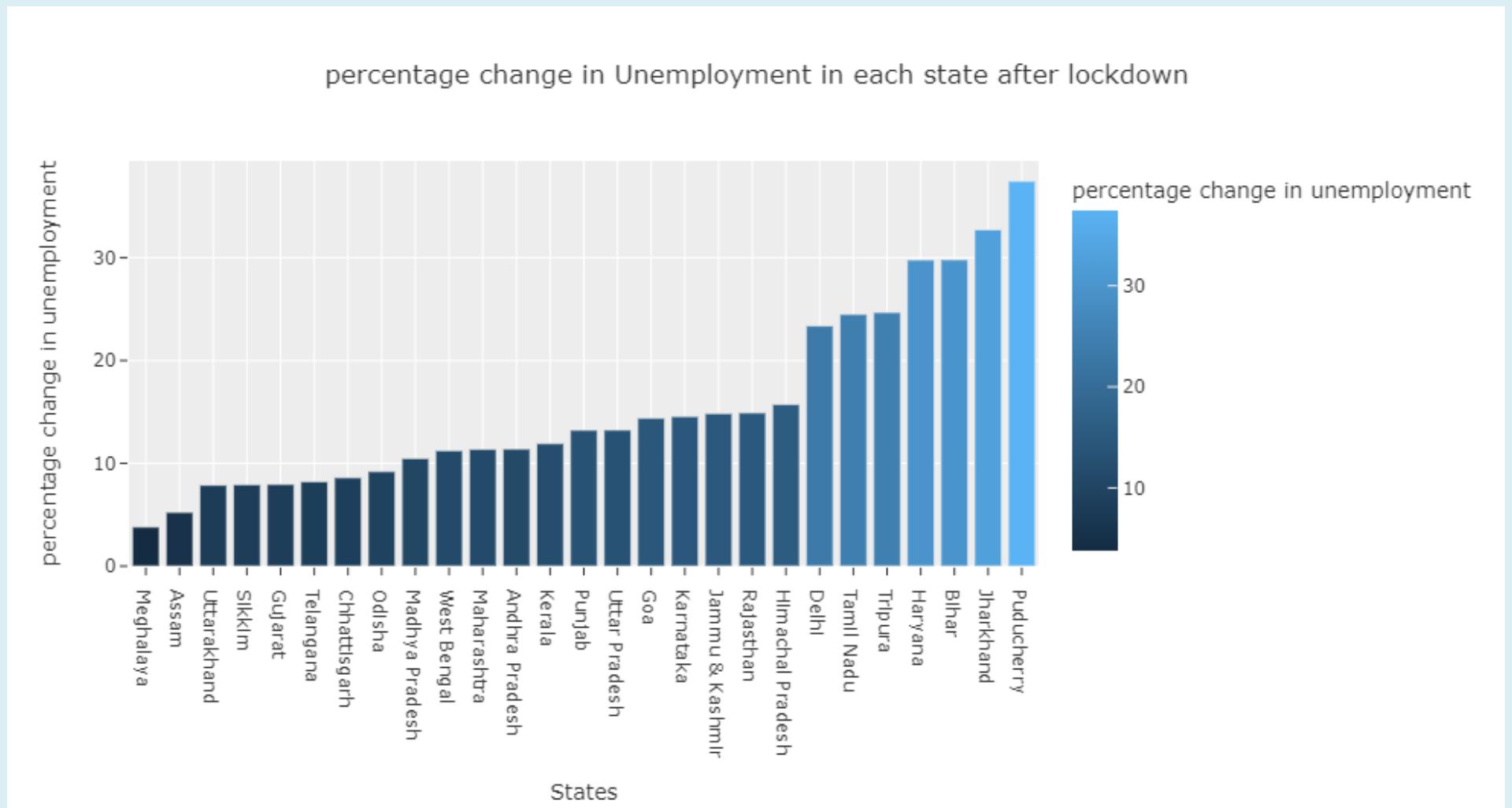
Table:-2

	States	Unemployment Rate after lockdown	Unemployment Rate before lockdown	percentage change in unemployment
15	Meghalaya	4.800000	4.2150	3.80
1	Assam	6.245000	6.2250	5.24
25	Uttarakhand	8.870000	9.2025	7.87
20	Sikkim	8.925000	12.9250	7.93
6	Gujarat	8.965000	9.3225	7.96
22	Telangana	9.215000	6.4500	8.22
3	Chhattisgarh	9.602500	7.2450	8.60
16	Odisha	10.205000	10.4650	9.20
13	Madhya Pradesh	11.475000	5.8150	10.48
26	West Bengal	12.235000	9.0475	11.24
14	Maharashtra	12.370000	9.0825	11.37
0	Andhra Pradesh	12.397500	9.4025	11.40
12	Kerala	12.917500	9.7225	11.92
18	Punjab	14.232500	8.8150	13.23
24	Uttar Pradesh	14.245000	12.0525	13.24
5	Goa	15.397500	7.5650	14.40
11	Karnataka	15.565000	9.9425	14.56
9	Jammu & Kashmir	15.846667	19.1200	14.85
19	Rajasthan	15.910000	13.9325	14.91
8	Himachal Pradesh	16.732500	13.6575	15.73
4	Delhi	24.360000	17.6975	23.36
21	Tamil Nadu	25.500000	14.9725	24.50
23	Tripura	25.672500	33.0625	24.67
7	Haryana	30.780000	28.5950	29.78
2	Bihar	30.802500	20.7425	29.80
10	Jharkhand	33.725000	19.4450	32.72
17	Puducherry	38.437500	19.8475	37.44

Percentage change in unemployment after lockdown:-

As seen in Figure 5, the unemployment rates in June and July were much higher than that before the pandemic. The situation of the salaried and wage-earning groups remains bleak. According to CMIE estimates, approximately 1.8 crores of salaried or wage-earning jobs have been lost, including manufacturing workers and service sector employees. As of June, around 30-40 lakh jobs had returned to work only (CMIE).

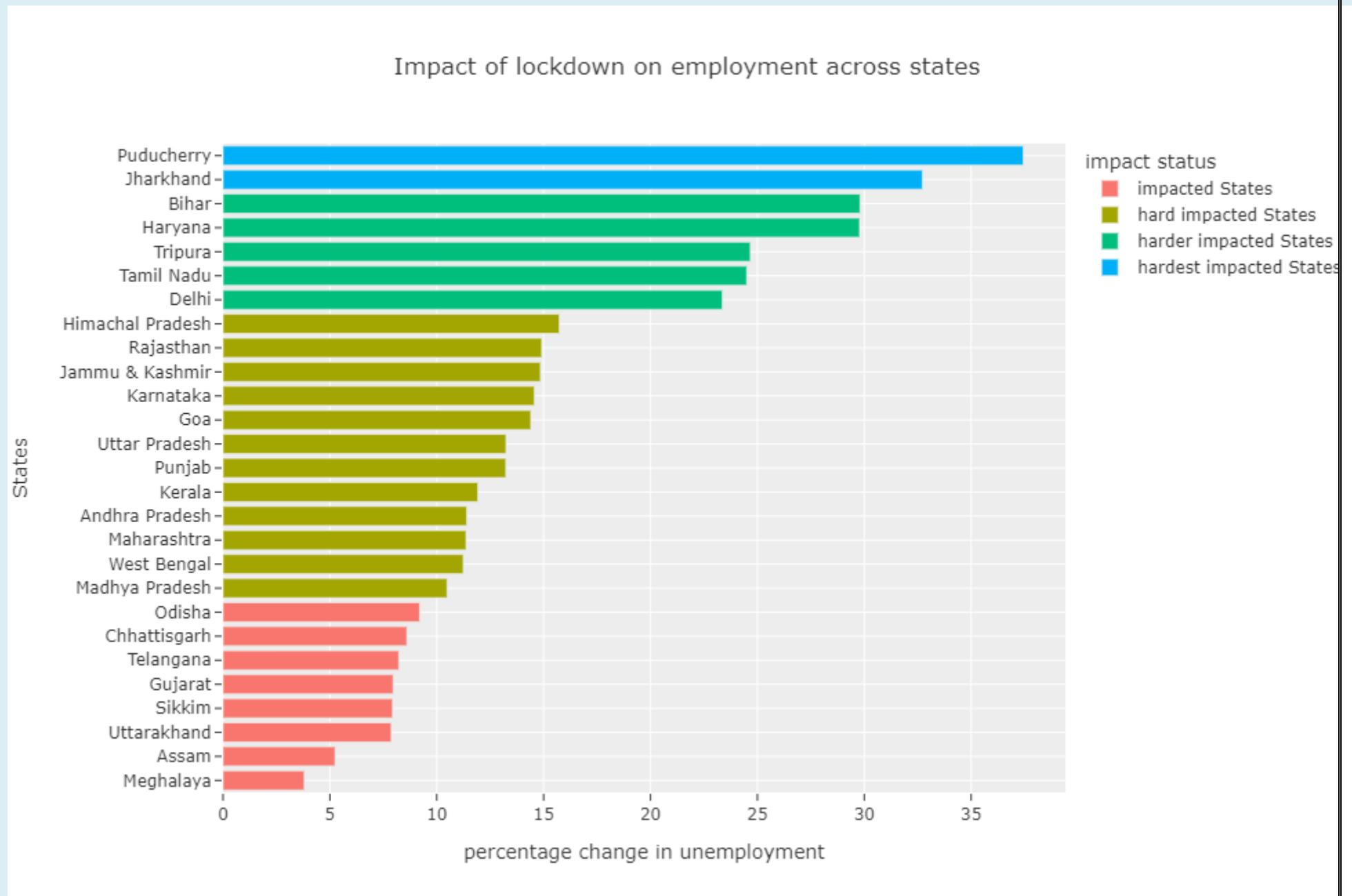
Figure:-8 percentage change in Unemployment in each state after lockdown.



Most impacted states/UT

- ❖ Puducherry
- ❖ Jharkhand
- ❖ Bihar
- ❖ Haryana
- ❖ Tripura

Figure:-9 Here the Bar graph shows that Impact of lockdown on employment across states



Suggestions:- The Covid-19 Pandemic shocks will continue to be expensive unless the government Increases investment in healthcare systems and tightens norms to govern the same. This kind of biological crisis demands a large investment in technology infrastructure. Make it mandatory for businesses to provide social security benefits to their employees. It is important to decentralize the industrial sector to reduce unemployment. If the industrial sector is centralized in one place, in the underdeveloped areas there will be fewer job opportunities. So the government should implement policies that support the decentralization of the industrial sector. Job prospects and labor productivity should be the key goals of the country's employment policy. Creating jobs for everyone is a policy the government should promote. To boost employment, we must boost agricultural and industrial production. The best way to reduce unemployment is to foster small, local businesses in rural areas. Most people in India work for themselves, either directly or indirectly, through cattle, cottage, or small-scale industry. Self-employment should be supported. To help these people, the government should provide them with financial aid, raw materials, and training in their chosen fields. If the government wants to create more job possibilities in rural areas of India, it should enhance funding for the Mahatma Gandhi National Rural

Employment Guarantee Scheme (MGNREGS). In the wake of the epidemic, the success of MGNREGAS has rekindled interest in an urban version of the program. This type of program could help urban economies cope with any exogenous shocks in the future. To address the issue of unemployment, population growth must be curtailed and family planning policies be strictly enforced and the government should adopt a holistic approach to strengthen the Self Help Groups (SHGs), particularly in rural areas.

Conclusion:- India is on the path of progression. The economy needs to use its available resources to the full extent. For any economy, unemployment is a grave problem. The pandemic has wrought havoc on the public health system and various other sectors of the economy. Due to the Covid-19 pandemic, many people's lives and livelihoods in India and around the world were affected. All sectors of the economy and the working population have been adversely affected, those already at a disadvantage in the labor market are at greater risk due to their status as migrant workers, lower wages, lower education achievement etc. Nevertheless, governments and citizens alike must boost productivity and raise living standards to achieve long-term, sustainable economic growth. If India aspires to a 5 trillion-dollar economy, structural and institutional changes must be made to the current growth path.

Code Reference:-

<https://drive.google.com/file/d/1oGylffARDIls3i1WgvmKKYj7C4ZW-rf/view?usp=sharing>

References:- Ali, M. A., & Kamraju, M. (2020). A study on impact of covid-19 pandemic on unemployment in India. *Re-Imagining the New Normal-The Transformational Lens of COVID*, 19, 50-61.

Bhupesh (2020). *The Impact Of COVID-19 On India's output And employment*. research analysis commentary essay

Dev, S. M., & Sengupta, R. (2020). Covid-19: Impact on the Indian economy. *Indira Gandhi Institute of Development Research, Mumbai April.*

Dobriyal, K. (1970, January 01). Unemployment in India Issues policy and perspective. Retrieved July 10, 2020, from

<http://shodhganga.inflibnet.ac.in:8080/jspui/handle/10603/58192>

<https://www.businesstoday.in/latest/economy-politics/story/at-7-2-percent-india-unemployment-rate-feb-worst-29-months-labour-force-down-25-7-million-cmie-174729-2019-03-06>

Jha, S., & Mohapatra, A. K. (2019). Jobless Growth in India: The Way Forward. Available at SSRN: <https://ssrn.com/abstract=3476599>

```
In [1]: import numpy as np #used to create arrays#
import pandas as pd #used to create dataframes#
```

```
import matplotlib.pyplot as plt #used to create graphs#
import seaborn as sns #it was also used to create graphs with specific colle
```

```
import calendar #used to edit calenders and get the years#
```

```
In [2]: import datetime as dt #used to datetime function#
```

```
import plotly.io as pio #used to create beautiful web-based interactive visual
pio.templates #shows the configurations which contains in it#
```

```
Out[2]: Templates configuration
```

```
-----
Default template: 'plotly'
Available templates:
['ggplot2', 'seaborn', 'simple_white', 'plotly',
'plotly_white', 'plotly_dark', 'presentation', 'xgridoff',
'ygridoff', 'gridon', 'none']
```

```
In [3]: import plotly.express as px # create entire figures at once#
import plotly.graph_objects as go
import plotly.figure_factory as ff
from IPython.display import HTML
```

Data Import

In [4]: #Importing data from the csv file#
df=pd.read_csv(r"C:\Users\STUDENT\Downloads\archive (3)\Unemployment_Rate_upto_11
df

Out[4]:

	state	Date	frequency	estimated unemployed 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	79.740
1	Andhra Pradesh	29-02-2020	M	5.83	16545652	40.90	South	15.9129	79.740
2	Andhra Pradesh	31-03-2020	M	5.79	15881197	39.18	South	15.9129	79.740
3	Andhra Pradesh	30-04-2020	M	20.51	11336911	33.10	South	15.9129	79.740
4	Andhra Pradesh	31-05-2020	M	17.43	12988845	36.46	South	15.9129	79.740
...
262	West Bengal	30-06-2020	M	7.29	30726310	40.39	East	22.9868	87.855
263	West Bengal	31-07-2020	M	6.83	35372506	46.17	East	22.9868	87.855
264	West Bengal	31-08-2020	M	14.87	33298644	47.48	East	22.9868	87.855
265	West Bengal	30-09-2020	M	9.35	35707239	47.73	East	22.9868	87.855
266	West Bengal	31-10-2020	M	9.98	33962549	45.63	East	22.9868	87.855

267 rows × 9 columns

In [5]: df.head() #returns top 5 rows of the data#

Out[5]:

	state	Date	frequency	estimated unemployed 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 [6]: df.info() # returns the complete information of dataset##

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 267 entries, 0 to 266
Data columns (total 9 columns):
 #   Column           Non-Null Count  Dtype  
---  --  
 0   state            267 non-null    object 
 1   Date             267 non-null    object 
 2   frequency        267 non-null    object 
 3   estimated unemployed rate(%)  267 non-null    float64
 4   estimated employed      267 non-null    int64  
 5   estimated labour participation rate(%) 267 non-null    float64
 6   Region           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
```

```
In [7]: df.isnull().sum() #returns true if any null value#
```

```
Out[7]: state  
        Date  
        frequency  
        estimated unemployed rate(%)  
        estimated employed  
        estimated labour participation rate(%)  
        Region  
        longitude  
        latitude  
        dtype: int64
```

```
In [8]: df.columns #returns all column names#
```

```
Out[8]: Index(['state', 'Date', 'frequency', 'estimated unemployed rate(%)',
   'estimated employed', 'estimated labour participation rate(%)',
   'Region', 'longitude', 'latitude'],
  dtype='object')
```

```
In [9]: a=df[["Date"]].values      #returns the values of the column "data"#
a
```

```
[ ' 31-05-2020' ],  
[ ' 30-06-2020' ],  
[ ' 31-07-2020' ],  
[ ' 31-08-2020' ],  
[ ' 30-09-2020' ],  
[ ' 31-10-2020' ],  
[ ' 31-01-2020' ],  
[ ' 29-02-2020' ],  
[ ' 31-03-2020' ],  
[ ' 30-04-2020' ],  
[ ' 31-05-2020' ],  
[ ' 30-06-2020' ],  
[ ' 31-07-2020' ],  
[ ' 31-08-2020' ],  
[ ' 30-09-2020' ],  
[ ' 31-10-2020' ],  
[ ' 31-01-2020' ],  
[ ' 29-02-2020' ],  
[ ' 31-03-2020' ],
```

```
In [10]: df['estimated_employed'] #returns the values of estimated_employed#
```

```
Out[10]: 0      16635535
          1      16545652
          2      15881197
          3      11336911
          4      12988845
          ...
          262     30726310
          263     35372506
          264     33298644
          265     35707239
          266     33962549
Name: estimated_employed, Length: 267, dtype: int64
```

```
In [11]: df['estimated labour participation rate(%)'] #returns the values of estimated
```

```
Out[11]: 0      41.02
         1      40.90
         2      39.18
         3      33.10
         4      36.46
         ...
        262     40.39
        263     46.17
        264     47.48
        265     47.73
        266     45.63
Name: estimated labour participation rate(%), Length: 267, dtype: float64
```

```
In [12]: b=df[["frequency"]].values #returns values of column frequency#  
b
```

```
In [13]: elpr=df[["estimated labour participation rate(%)"]].values #returns the values as an array
```

```
In [14]: a= pd.to_datetime(df['Date'],dayfirst=True) #helps to convert string Date time into
```

```
In [15]: b= df['frequency'].astype('category') #used to cast a pandas object to a specific
```

```
In [16]: df['Month'] = a.dt.month #specifying month in datetime#
```

```
In [17]: df['Month_int'] = df['Month'].apply(lambda x: int(x)) #can take any number of arguments
```

```
In [18]: df['Month name'] = df['Month int'].apply(lambda x: calendar.month_abbr[x])
```

```
In [19]: df['Region'] = df['Region'].astype('category')
```

In [20]: `df.drop(columns='Month', inplace=True) # to drop single or multiple columns in df
df.head(3)`

Out[20]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Month_int
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	

In [21]: `df.describe() #summary of dataframe#`

Out[21]:

	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	longitude	latitude	Month_int
count	267.000000	2.670000e+02	267.000000	267.000000	267.000000	267.000000
mean	12.236929	1.396211e+07	41.681573	22.826048	80.532425	5.535581
std	10.803283	1.336632e+07	7.845419	6.270731	5.831738	2.870915
min	0.500000	1.175420e+05	16.770000	10.850500	71.192400	1.000000
25%	4.845000	2.838930e+06	37.265000	18.112400	76.085600	3.000000
50%	9.650000	9.732417e+06	40.390000	23.610200	79.019300	6.000000
75%	16.755000	2.187869e+07	44.055000	27.278400	85.279900	8.000000
max	75.850000	5.943376e+07	69.690000	33.778200	92.937600	10.000000

Stats

In [22]:

```
df1=df[['estimated unemployed rate(%)','estimated employed','estimated labour participation rate(%)']]
round(df1.describe().T,2)
# used to round a DataFrame to a variable number of decimal places,&T is for transpose
```

Out[22]:

	count	mean	std	min	25%	50%	75%
estimated unemployed rate(%)	267.0	12.24	10.80	0.50	4.84	9.65	16.76
estimated employed	267.0	13962105.72	13366318.36	117542.00	2838930.50	9732417.00	21878686.00
estimated labour participation rate(%)	267.0	41.68	7.85	16.77	37.26	40.39	44.06

In [23]:

```
region_stats = df.groupby(['Region'])[['estimated unemployed rate(%)','estimated employed','estimated labour participation rate(%)']]
region_stats = round(region_stats,2) # used to round a DataFrame to a variable number of decimal places

region_stats
```

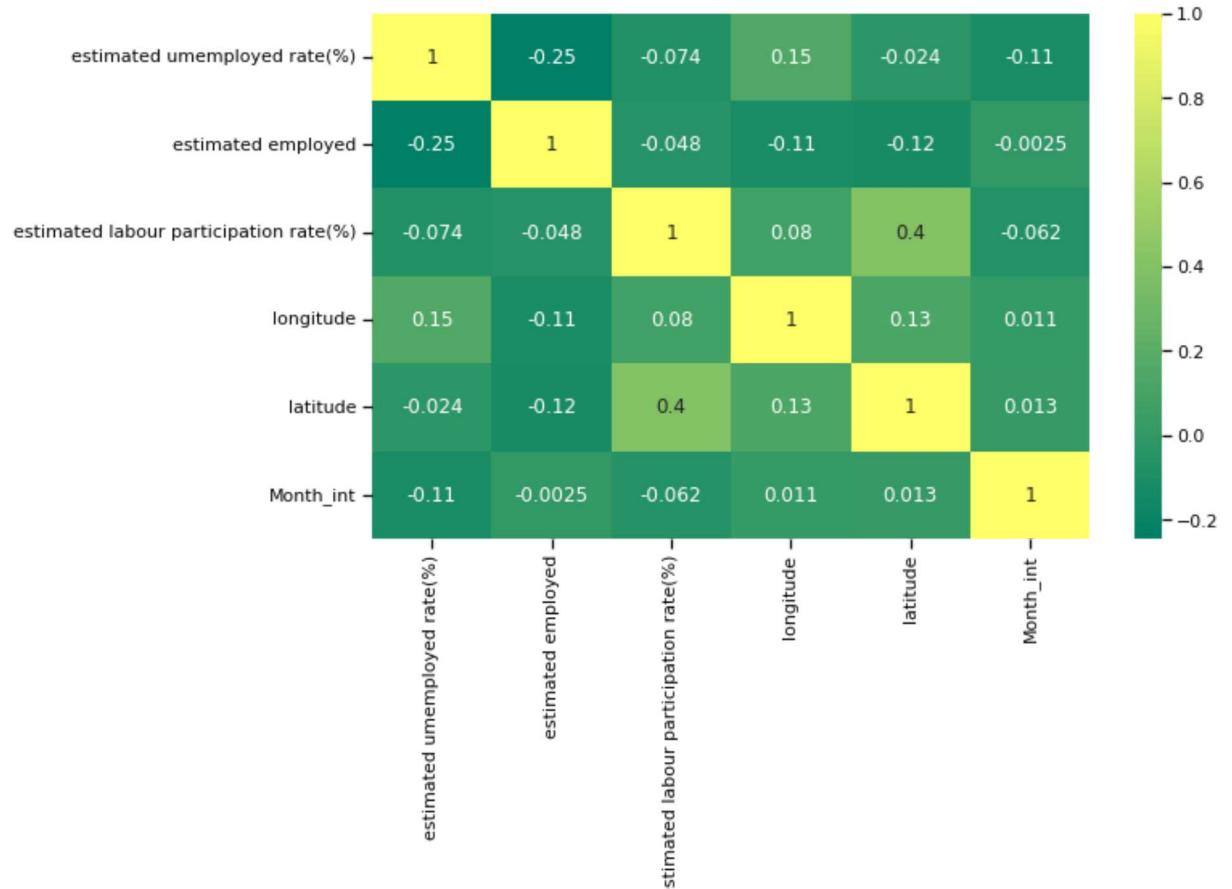
Out[23]:

	Region	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)
0	East	13.92	19602366.90	40.11
1	North	15.89	13072487.92	38.70
2	Northeast	10.95	3617105.53	52.06
3	South	10.45	14040589.33	40.44
4	West	8.24	18623512.72	41.26

```
In [24]: heat_maps = df[['estimated unemployed rate(%)',
    'estimated employed', 'estimated labour participation rate(%)',
    'longitude', 'latitude', 'Month_int']]

heat_maps = heat_maps.corr()

plt.figure(figsize=(10,6))
sns.set_context('notebook', font_scale=1)
sns.heatmap(heat_maps, annot=True, cmap='summer');
```

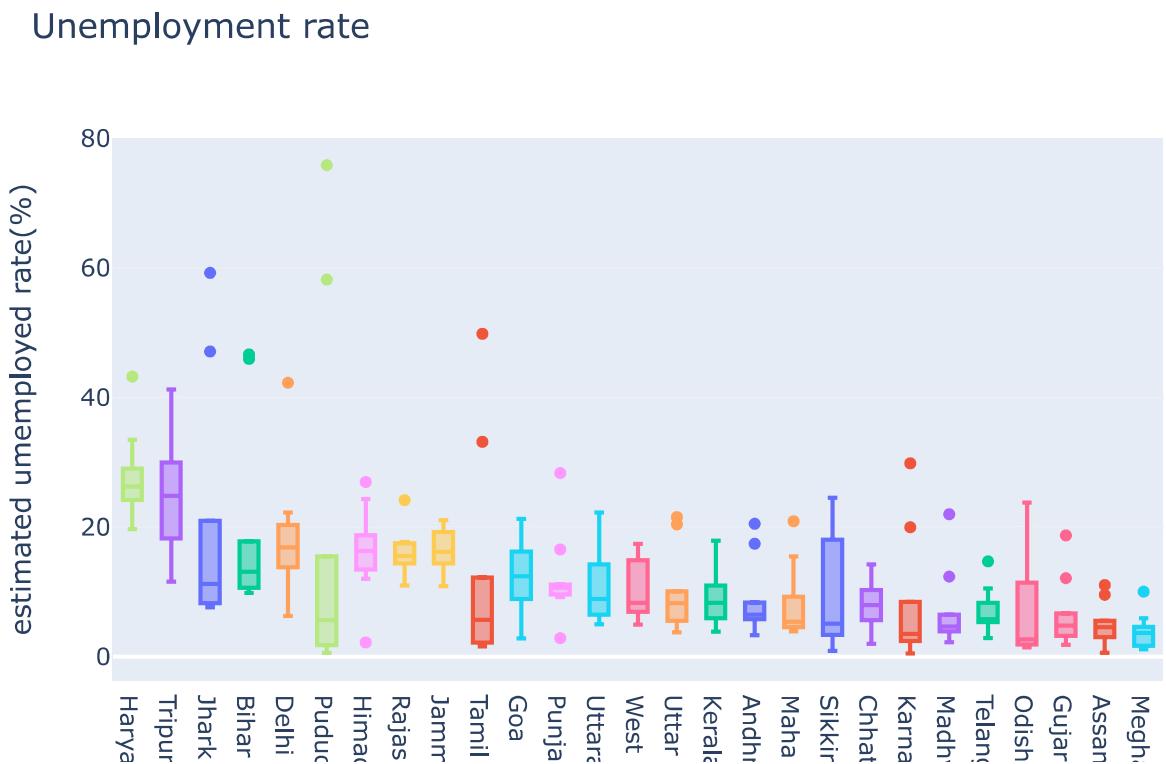


Data exploratory Analysis

In [25]:

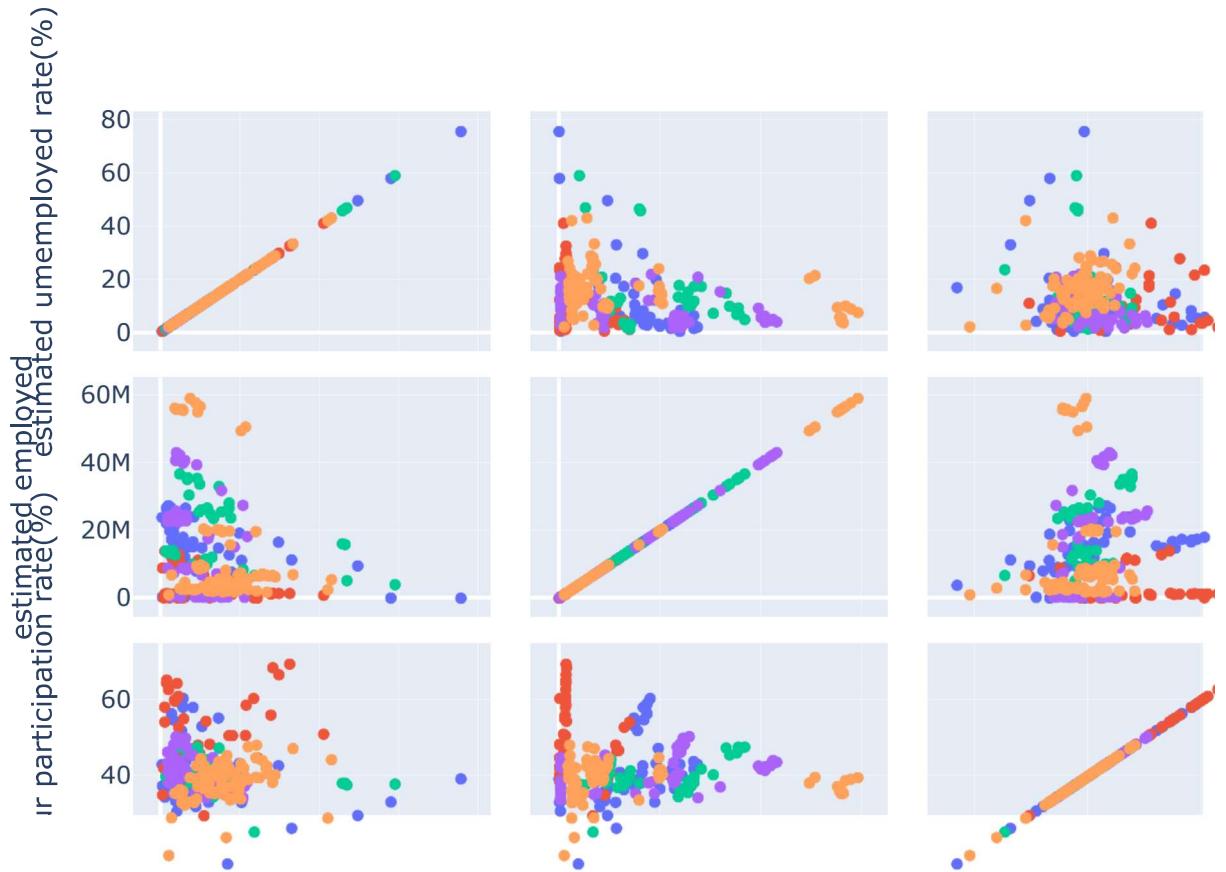
```
fig = px.box(df,x='state',y='estimated unemployed rate(%)',color='state',title='Unemployment Rate Analysis in India')
fig.update_layout(xaxis={'categoryorder':'total descending'})
fig.show()
```

The below box shows unemployment rate in each state in India



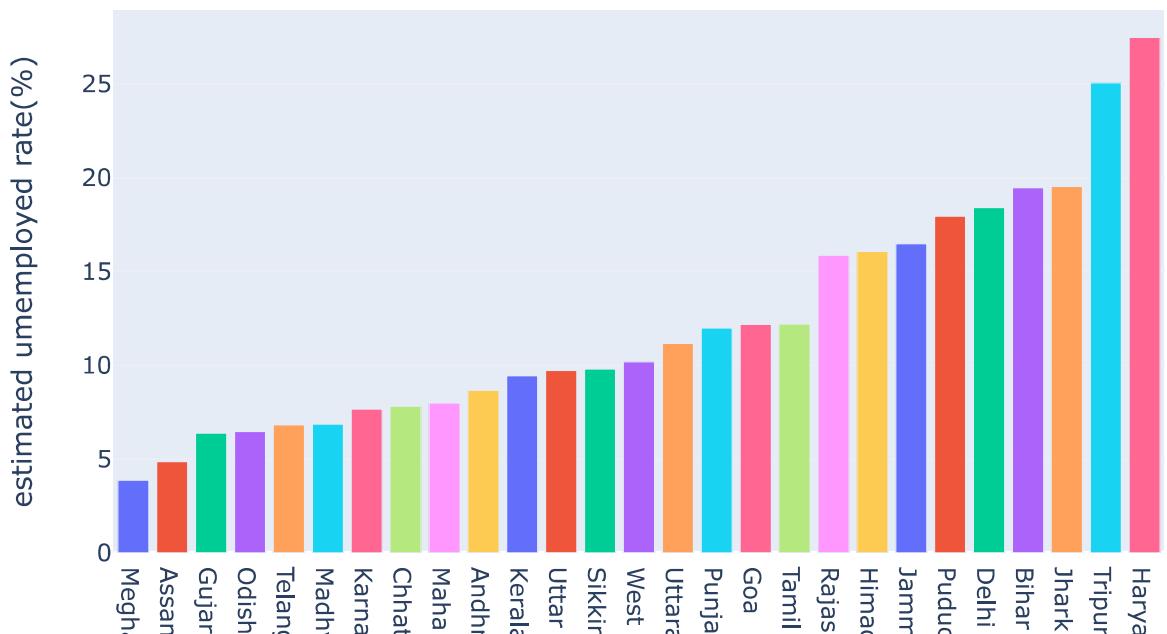
In [26]: #correlation#

```
fig = px.scatter_matrix(df, template='plotly',
    dimensions=['estimated unemployed rate(%)','estimated employed',
                'estimated labour participation rate(%)'],
    color='Region')
fig.show()
```



```
In [27]: plot_ump = df[['estimated unemployed rate(%)', 'state']]  
  
df_unemp = plot_ump.groupby('state').mean().reset_index() #returns a group of sin  
  
df_unemp = df_unemp.sort_values('estimated unemployed rate(%)') #sorting out the  
  
fig = px.bar(df_unemp, x='state',y='estimated unemployed rate(%)',color='state',  
              title='Average Unemployment Rate in each state',template='plotly')  
  
fig.show()
```

Average Unemployment Rate in each state



```
In [28]: df['state']
```

```
Out[28]: 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: state, Length: 267, dtype: object
```

In [29]: `andhra=df[1:10]`

andhra

Out[29]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Mc
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	
5	Andhra Pradesh	30- 06- 2020	M	3.31	19805400	47.41	South	15.9129	79.74	
6	Andhra Pradesh	31- 07- 2020	M	8.34	15431615	38.91	South	15.9129	79.74	
7	Andhra Pradesh	31- 08- 2020	M	6.96	15251776	37.83	South	15.9129	79.74	
8	Andhra Pradesh	30- 09- 2020	M	6.40	15220312	37.47	South	15.9129	79.74	
9	Andhra Pradesh	31- 10- 2020	M	6.59	15157557	37.34	South	15.9129	79.74	

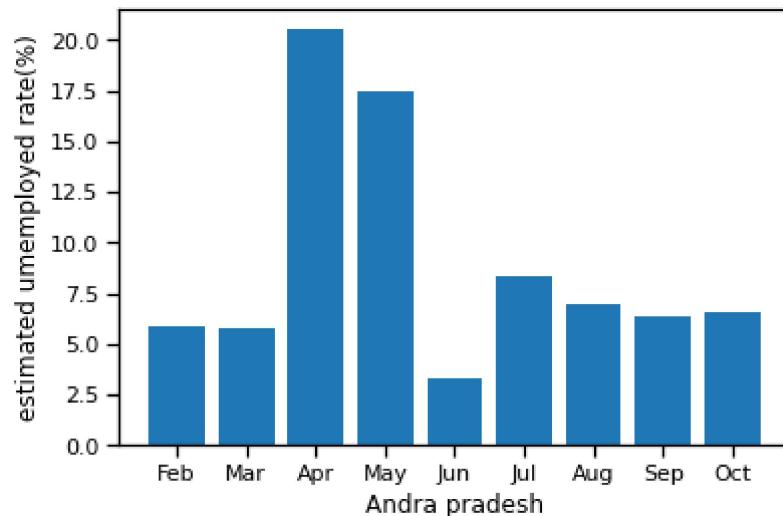


```
In [30]: mystate=df.iloc[1:10,[0, 1, 3]]
mystate
```

Out[30]:

	state	Date	estimated unemployed rate(%)
1	Andhra Pradesh	29-02-2020	5.83
2	Andhra Pradesh	31-03-2020	5.79
3	Andhra Pradesh	30-04-2020	20.51
4	Andhra Pradesh	31-05-2020	17.43
5	Andhra Pradesh	30-06-2020	3.31
6	Andhra Pradesh	31-07-2020	8.34
7	Andhra Pradesh	31-08-2020	6.96
8	Andhra Pradesh	30-09-2020	6.40
9	Andhra Pradesh	31-10-2020	6.59

```
In [31]: x=andhra["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=andhra["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Andra pradesh")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [32]:

```
assam=df.iloc[11:20,[0, 1, 3]]  
assam
```

Out[32]:

	state	Date	estimated umemployed rate(%)
11	Assam	29-02-2020	4.41
12	Assam	31-03-2020	4.77
13	Assam	30-04-2020	11.06
14	Assam	31-05-2020	9.55
15	Assam	30-06-2020	0.60
16	Assam	31-07-2020	3.77
17	Assam	31-08-2020	5.53
18	Assam	30-09-2020	1.19
19	Assam	31-10-2020	3.02

In [33]: `assam=df[11:20]`

```
assam
```

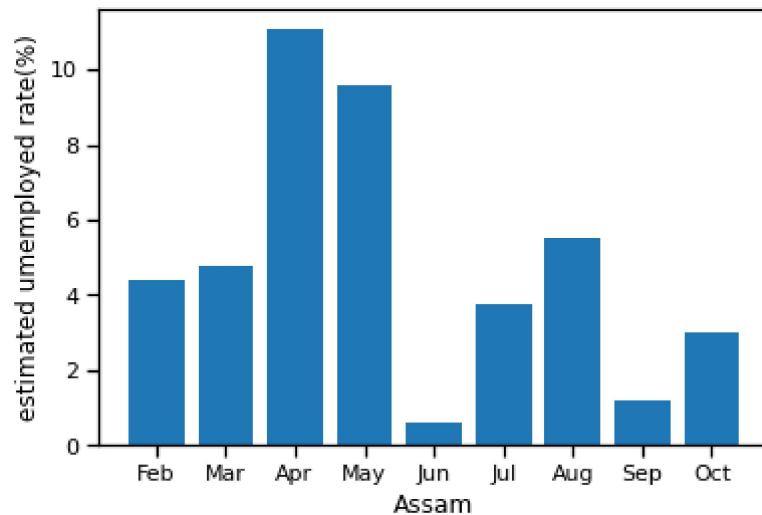
Out[33]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
11	Assam	29-02-2020	M	4.41	10088268	40.77	Northeast	26.2006	92.9376
12	Assam	31-03-2020	M	4.77	11542888	46.73	Northeast	26.2006	92.9376
13	Assam	30-04-2020	M	11.06	6830817	29.55	Northeast	26.2006	92.9376
14	Assam	31-05-2020	M	9.55	11367897	48.26	Northeast	26.2006	92.9376
15	Assam	30-06-2020	M	0.60	9095944	35.07	Northeast	26.2006	92.9376
16	Assam	31-07-2020	M	3.77	10286757	40.88	Northeast	26.2006	92.9376
17	Assam	31-08-2020	M	5.53	9781310	39.52	Northeast	26.2006	92.9376
18	Assam	30-09-2020	M	1.19	14107641	54.38	Northeast	26.2006	92.9376
19	Assam	31-10-2020	M	3.02	11949329	46.84	Northeast	26.2006	92.9376



In [34]:

```
x=assam["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=assam["estimated unemployed rate(%)]
plt.bar(x,y)
plt.xlabel("Assam")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [35]: `bihar=df[21:30]`

`bihar`

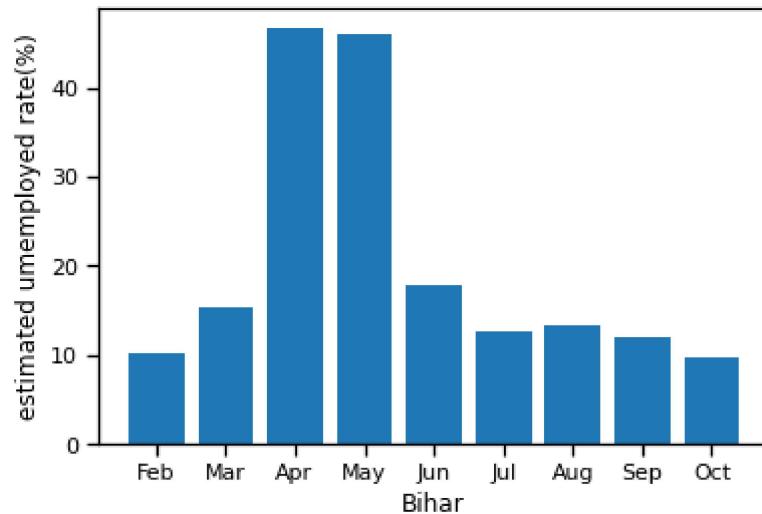
Out[35]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Mor
21	Bihar		29-02-2020	M	10.29	26281655	37.35	East	25.0961	85.3131	
22	Bihar		31-03-2020	M	15.43	25717519	38.69	East	25.0961	85.3131	
23	Bihar		30-04-2020	M	46.64	16046236	38.17	East	25.0961	85.3131	
24	Bihar		31-05-2020	M	45.96	16280203	38.16	East	25.0961	85.3131	
25	Bihar		30-06-2020	M	17.82	23963933	36.86	East	25.0961	85.3131	
26	Bihar		31-07-2020	M	12.79	24989370	36.14	East	25.0961	85.3131	
27	Bihar		31-08-2020	M	13.44	23795534	34.59	East	25.0961	85.3131	
28	Bihar		30-09-2020	M	11.91	26902907	38.35	East	25.0961	85.3131	
29	Bihar		31-10-2020	M	9.82	25693252	35.70	East	25.0961	85.3131	



In [36]:

```
x=bihar["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=bihar["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Bihar")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [37]: Chhattisgarh=df[31:40]

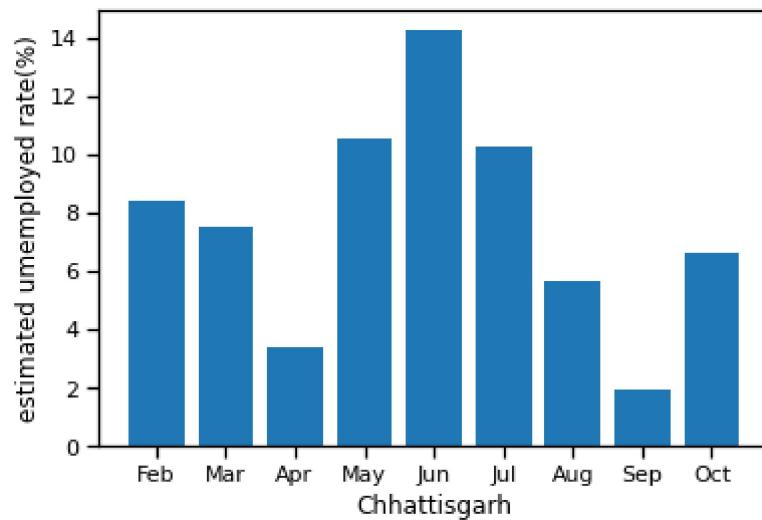
Chhattisgarh

Out[37]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitud
31	Chhattisgarh		29-02-2020	M	8.38	9195114	45.58	West	21.2787	81.866
32	Chhattisgarh		31-03-2020	M	7.54	9302317	45.59	West	21.2787	81.866
33	Chhattisgarh		30-04-2020	M	3.41	7600448	35.58	West	21.2787	81.866
34	Chhattisgarh		31-05-2020	M	10.50	6991217	35.23	West	21.2787	81.866
35	Chhattisgarh		30-06-2020	M	14.23	7332807	38.48	West	21.2787	81.866
36	Chhattisgarh		31-07-2020	M	10.27	8620294	43.14	West	21.2787	81.866
37	Chhattisgarh		31-08-2020	M	5.63	9050422	42.97	West	21.2787	81.866
38	Chhattisgarh		30-09-2020	M	1.96	9021854	41.14	West	21.2787	81.866
39	Chhattisgarh		31-10-2020	M	6.62	8546847	40.82	West	21.2787	81.866



```
In [38]: x=Chhattisgarh[ "Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=Chhattisgarh[ "estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Chhattisgarh")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [39]: `delhi=df[41:50]`

`delhi`

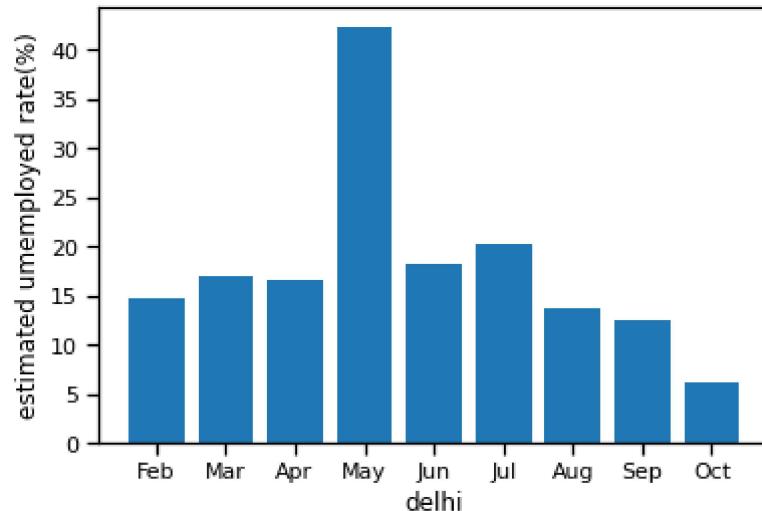
Out[39]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Mor
41	Delhi		29-02-2020	M	14.84	5856307	43.92	North	28.7041	77.1025	
42	Delhi		31-03-2020	M	17.04	5553805	42.65	North	28.7041	77.1025	
43	Delhi		30-04-2020	M	16.68	3119274	23.80	North	28.7041	77.1025	
44	Delhi		31-05-2020	M	42.27	2632404	28.91	North	28.7041	77.1025	
45	Delhi		30-06-2020	M	18.19	4418914	34.17	North	28.7041	77.1025	
46	Delhi		31-07-2020	M	20.30	4291053	33.97	North	28.7041	77.1025	
47	Delhi		31-08-2020	M	13.79	4850107	35.41	North	28.7041	77.1025	
48	Delhi		30-09-2020	M	12.53	4958373	35.59	North	28.7041	77.1025	
49	Delhi		31-10-2020	M	6.27	4842698	32.36	North	28.7041	77.1025	



In [40]:

```
x=delhi["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=delhi["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("delhi")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [41]: goa=df[51:60]

```
goa
```

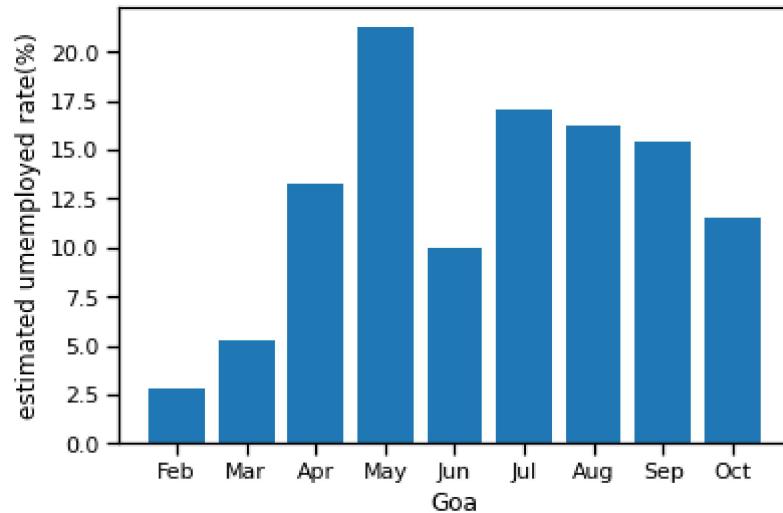
Out[41]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	More
51	Goa		29-02-2020	M	2.81	478068	38.38	West	15.2993	74.124	
52	Goa		31-03-2020	M	5.25	411761	33.88	West	15.2993	74.124	
53	Goa		30-04-2020	M	13.31	500614	44.97	West	15.2993	74.124	
54	Goa		31-05-2020	M	21.25	378244	37.36	West	15.2993	74.124	
55	Goa		30-06-2020	M	9.96	489111	42.21	West	15.2993	74.124	
56	Goa		31-07-2020	M	17.07	458876	42.94	West	15.2993	74.124	
57	Goa		31-08-2020	M	16.21	473016	43.76	West	15.2993	74.124	
58	Goa		30-09-2020	M	15.38	425004	38.89	West	15.2993	74.124	
59	Goa		31-10-2020	M	11.54	392304	34.30	West	15.2993	74.124	



In [42]:

```
x=goa[ "Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=goa[ "estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Goa")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [43]: `gujarat=df[61:70]`

```
gujarat
```

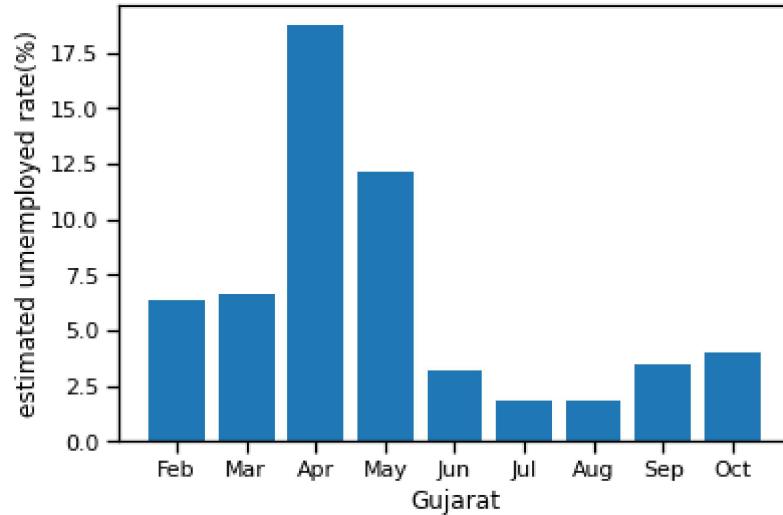
Out[43]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	M
61	Gujarat		29-02-2020	M	6.38	24757795	50.11	West	22.2587	71.1924	
62	Gujarat		31-03-2020	M	6.66	23566641	47.75	West	22.2587	71.1924	
63	Gujarat		30-04-2020	M	18.71	15288878	35.50	West	22.2587	71.1924	
64	Gujarat		31-05-2020	M	12.11	17836936	38.23	West	22.2587	71.1924	
65	Gujarat		30-06-2020	M	3.20	23657055	45.96	West	22.2587	71.1924	
66	Gujarat		31-07-2020	M	1.84	24276120	46.41	West	22.2587	71.1924	
67	Gujarat		31-08-2020	M	1.87	22817232	43.55	West	22.2587	71.1924	
68	Gujarat		30-09-2020	M	3.42	25010199	48.41	West	22.2587	71.1924	
69	Gujarat		31-10-2020	M	4.03	25970259	50.49	West	22.2587	71.1924	



In [44]:

```
x=gujarat["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=gujarat["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Gujarat")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [45]: haryana=df[71:80]

```
haryana
```

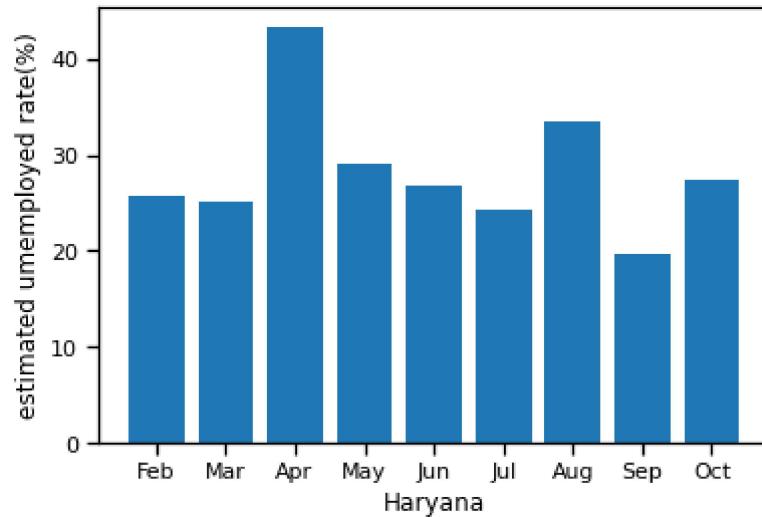
Out[45]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Index
71	Haryana		29-02-2020	M	25.77	7322942	44.21	North	29.0588	76.0856	
72	Haryana		31-03-2020	M	25.05	6641555	39.63	North	29.0588	76.0856	
73	Haryana		30-04-2020	M	43.22	5647630	44.38	North	29.0588	76.0856	
74	Haryana		31-05-2020	M	29.02	6437868	40.39	North	29.0588	76.0856	
75	Haryana		30-06-2020	M	26.70	6951934	42.14	North	29.0588	76.0856	
76	Haryana		31-07-2020	M	24.18	6800652	39.77	North	29.0588	76.0856	
77	Haryana		31-08-2020	M	33.50	7113788	47.32	North	29.0588	76.0856	
78	Haryana		30-09-2020	M	19.68	7132439	39.20	North	29.0588	76.0856	
79	Haryana		31-10-2020	M	27.31	6698551	40.60	North	29.0588	76.0856	



In [46]:

```
x=haryana["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=haryana["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Haryana")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [47]: `himachal=df[81:90]`

himachal

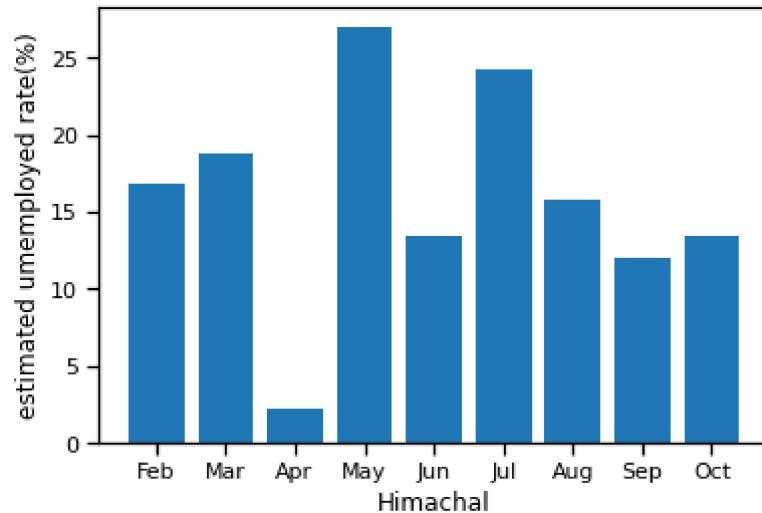
Out[47]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
81	Himachal Pradesh	29-02-2020	M	16.84	2180268	43.30	North	31.1048	77.1734
82	Himachal Pradesh	31-03-2020	M	18.76	2021858	41.04	North	31.1048	77.1734
83	Himachal Pradesh	30-04-2020	M	2.20	1131128	19.04	North	31.1048	77.1734
84	Himachal Pradesh	31-05-2020	M	26.95	1897639	42.70	North	31.1048	77.1734
85	Himachal Pradesh	30-06-2020	M	13.47	2199683	41.72	North	31.1048	77.1734
86	Himachal Pradesh	31-07-2020	M	24.31	2229456	48.25	North	31.1048	77.1734
87	Himachal Pradesh	31-08-2020	M	15.79	2029740	39.42	North	31.1048	77.1734
88	Himachal Pradesh	30-09-2020	M	12.04	2237480	41.54	North	31.1048	77.1734
89	Himachal Pradesh	31-10-2020	M	13.46	2123965	40.01	North	31.1048	77.1734



In [48]:

```
x=himachal["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=himachal["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Himachal")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [49]: `jammu=df[91:99]`

```
jammu
```

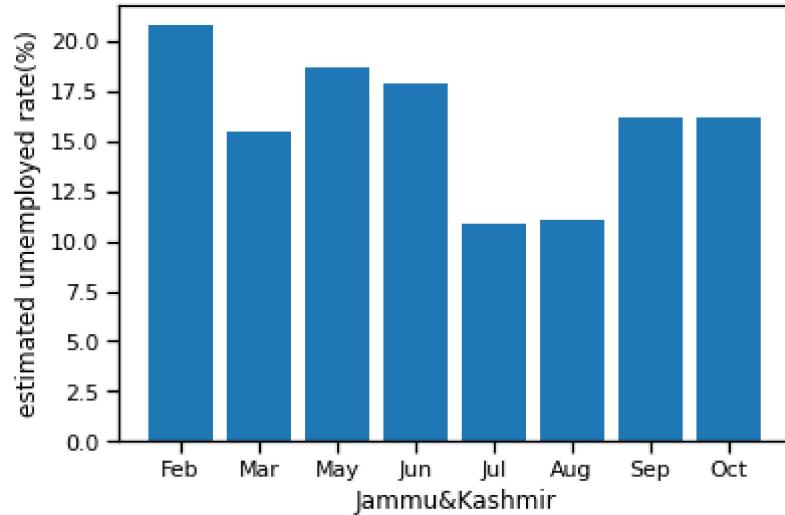
Out[49]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	M
91	Jammu & Kashmir	29-02-2020	M	20.78	3223513	39.17	North	33.7782	76.5762	
92	Jammu & Kashmir	31-03-2020	M	15.50	3359107	38.18	North	33.7782	76.5762	
93	Jammu & Kashmir	31-05-2020	M	18.74	3246493	38.21	North	33.7782	76.5762	
94	Jammu & Kashmir	30-06-2020	M	17.92	3202336	37.24	North	33.7782	76.5762	
95	Jammu & Kashmir	31-07-2020	M	10.88	3558889	38.03	North	33.7782	76.5762	
96	Jammu & Kashmir	31-08-2020	M	11.09	3429950	36.66	North	33.7782	76.5762	
97	Jammu & Kashmir	30-09-2020	M	16.17	3210281	36.31	North	33.7782	76.5762	
98	Jammu & Kashmir	31-10-2020	M	16.14	3106691	35.05	North	33.7782	76.5762	



In [50]:

```
x=jammu["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=jammu["estimated umemployed rate(%)]
plt.bar(x,y)
plt.xlabel("Jammu&Kashmir")
plt.ylabel("estimated umemployed rate(%"))
plt.show()
```



In [51]: `jarchand=df[100:109]`

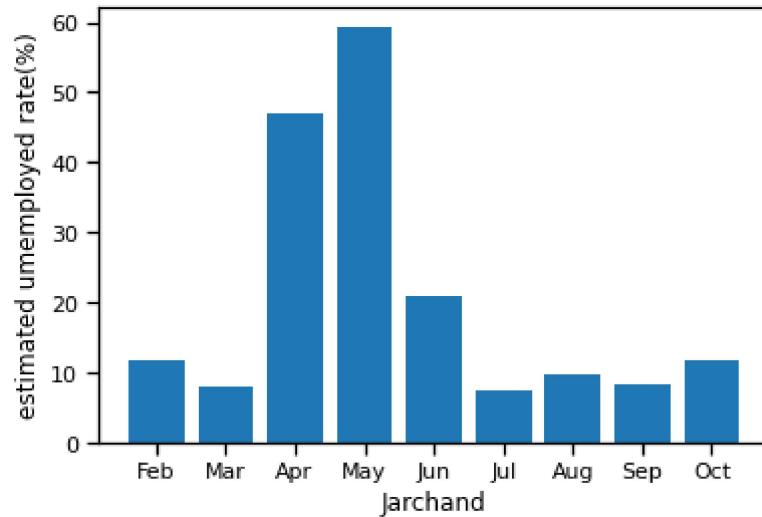
```
jarchand
```

Out[51]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
100	Jharkhand		29-02-2020	M	11.85	10425425	44.40	East	23.6102	85.2799
101	Jharkhand		31-03-2020	M	8.23	9638115	39.34	East	23.6102	85.2799
102	Jharkhand		30-04-2020	M	47.09	5335262	37.69	East	23.6102	85.2799
103	Jharkhand		31-05-2020	M	59.23	4145385	37.92	East	23.6102	85.2799
104	Jharkhand		30-06-2020	M	20.95	8622722	40.59	East	23.6102	85.2799
105	Jharkhand		31-07-2020	M	7.63	9521900	38.27	East	23.6102	85.2799
106	Jharkhand		31-08-2020	M	9.76	9331640	38.31	East	23.6102	85.2799
107	Jharkhand		30-09-2020	M	8.24	10185670	41.04	East	23.6102	85.2799
108	Jharkhand		31-10-2020	M	11.80	10302276	43.08	East	23.6102	85.2799



```
In [52]: x=jarchand["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=jarchand["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Jarchand")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [53]: `karnataka=df[110:119]`

karnataka

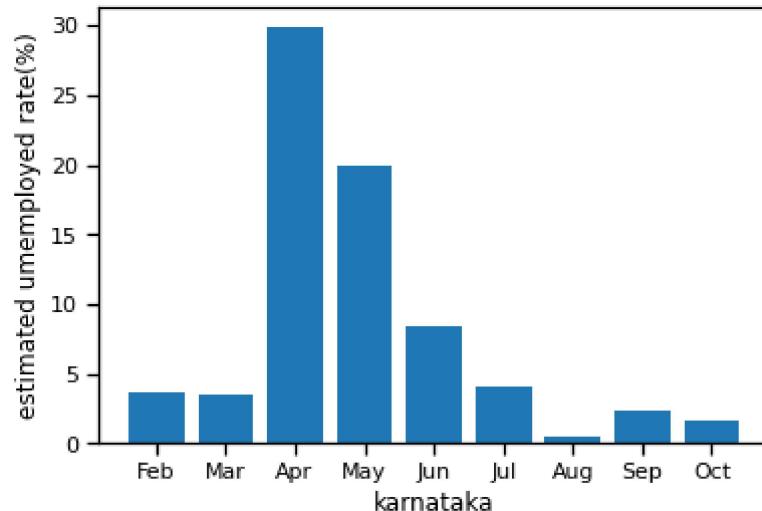
Out[53]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
110	Karnataka		29-02-2020	M	3.61	21677719	40.54	South	15.3173	75.7139
111	Karnataka		31-03-2020	M	3.46	22079653	41.14	South	15.3173	75.7139
112	Karnataka		30-04-2020	M	29.84	16718395	42.78	South	15.3173	75.7139
113	Karnataka		31-05-2020	M	19.97	19397853	43.43	South	15.3173	75.7139
114	Karnataka		30-06-2020	M	8.44	24215057	47.29	South	15.3173	75.7139
115	Karnataka		31-07-2020	M	4.01	22885616	42.55	South	15.3173	75.7139
116	Karnataka		31-08-2020	M	0.50	24094289	43.13	South	15.3173	75.7139
117	Karnataka		30-09-2020	M	2.41	20127176	36.66	South	15.3173	75.7139
118	Karnataka		31-10-2020	M	1.58	22356390	40.30	South	15.3173	75.7139



In [54]:

```
x=karnataka["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=karnataka["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("karnataka")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [55]: `kerala=df[120:129]`

```
kerala
```

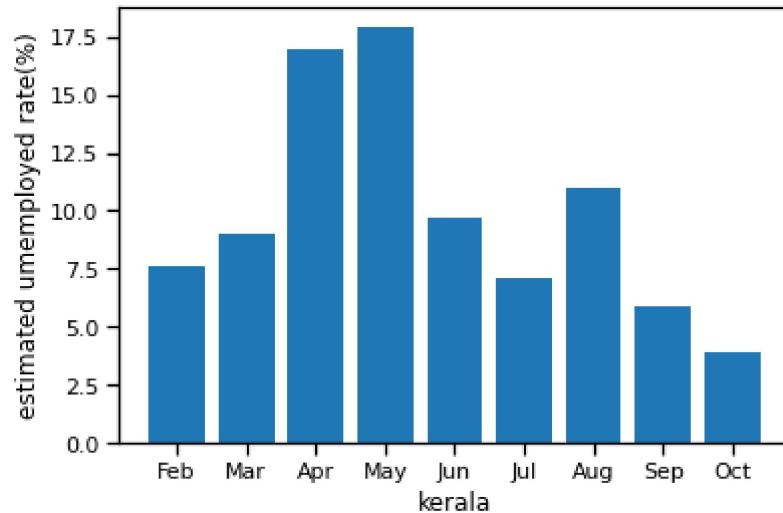
Out[55]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	M
120	Kerala		29-02-2020	M	7.60	9828023	37.71	South	10.8505	76.2711	
121	Kerala		31-03-2020	M	8.99	8221728	32.00	South	10.8505	76.2711	
122	Kerala		30-04-2020	M	16.99	3933276	16.77	South	10.8505	76.2711	
123	Kerala		31-05-2020	M	17.88	7921962	34.11	South	10.8505	76.2711	
124	Kerala		30-06-2020	M	9.71	9228268	36.11	South	10.8505	76.2711	
125	Kerala		31-07-2020	M	7.09	9504420	36.10	South	10.8505	76.2711	
126	Kerala		31-08-2020	M	10.98	9031944	35.78	South	10.8505	76.2711	
127	Kerala		30-09-2020	M	5.91	9240913	34.60	South	10.8505	76.2711	
128	Kerala		31-10-2020	M	3.88	9152881	33.52	South	10.8505	76.2711	



In [56]:

```
x=kerala["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=kerala["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("kerala")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [57]: `MadhyaPradesh=df[130:139]`

MadhyaPradesh

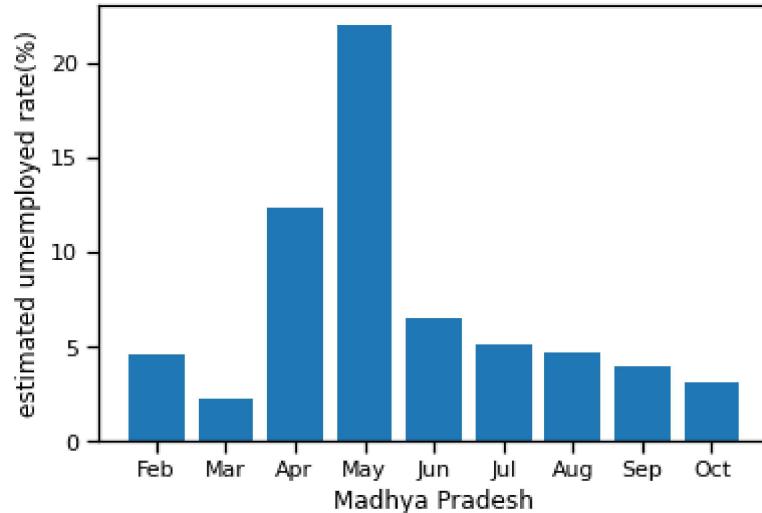
Out[57]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
130	Madhya Pradesh	29-02-2020	M	4.57	22711479	39.00	West	22.9734	78.6569
131	Madhya Pradesh	31-03-2020	M	2.22	22867164	38.24	West	22.9734	78.6569
132	Madhya Pradesh	30-04-2020	M	12.36	19041832	35.45	West	22.9734	78.6569
133	Madhya Pradesh	31-05-2020	M	21.98	18443927	38.48	West	22.9734	78.6569
134	Madhya Pradesh	30-06-2020	M	6.48	23054646	40.04	West	22.9734	78.6569
135	Madhya Pradesh	31-07-2020	M	5.08	23940158	40.88	West	22.9734	78.6569
136	Madhya Pradesh	31-08-2020	M	4.70	23619011	40.08	West	22.9734	78.6569
137	Madhya Pradesh	30-09-2020	M	3.91	23341952	39.20	West	22.9734	78.6569
138	Madhya Pradesh	31-10-2020	M	3.13	23144552	38.47	West	22.9734	78.6569



In [58]:

```
x=MadhyaPradesh[ "Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=MadhyaPradesh[ "estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Madhya Pradesh")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [59]: `Maharashtra=df[140:149]`

Maharashtra

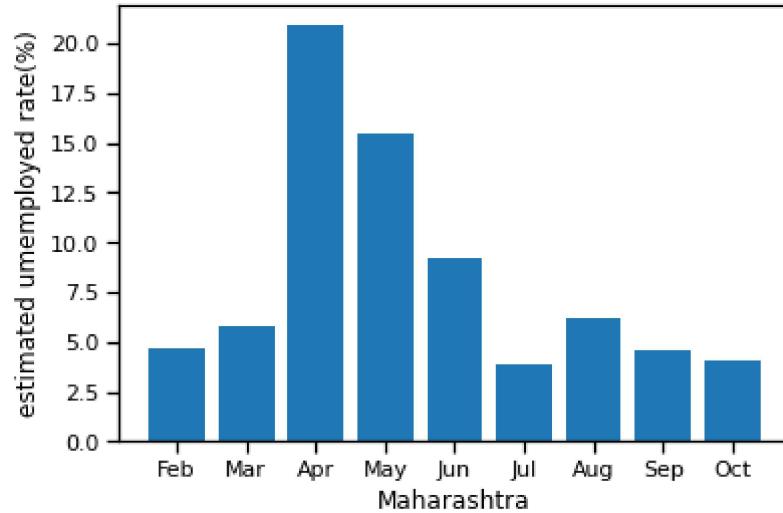
Out[59]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
140		Maharashtra	29-02-2020	M	4.69	42416317	43.80	West	19.7515	75.71
141		Maharashtra	31-03-2020	M	5.79	40196806	41.91	West	19.7515	75.71
142		Maharashtra	30-04-2020	M	20.90	27689253	34.32	West	19.7515	75.71
143		Maharashtra	31-05-2020	M	15.46	32116847	37.17	West	19.7515	75.71
144		Maharashtra	30-06-2020	M	9.23	39708538	42.71	West	19.7515	75.71
145		Maharashtra	31-07-2020	M	3.89	40998545	41.57	West	19.7515	75.71
146		Maharashtra	31-08-2020	M	6.23	40963616	42.49	West	19.7515	75.71
147		Maharashtra	30-09-2020	M	4.55	42042911	42.75	West	19.7515	75.71
148		Maharashtra	31-10-2020	M	4.10	43317881	43.75	West	19.7515	75.71



In [60]:

```
x=Maharashtra["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=Maharashtra["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Maharashtra")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [61]: Meghalaya=df[150:159]

Meghalaya

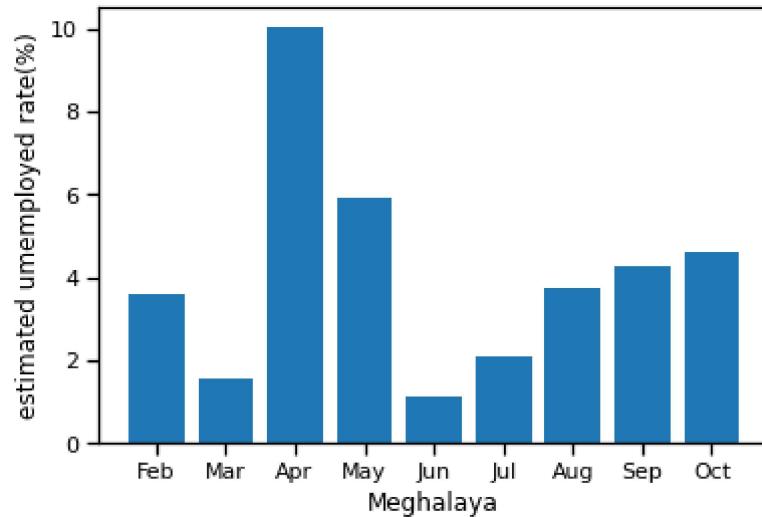
Out[61]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitu
150	Meghalaya	29-02-2020	M	3.59	1346829	60.20	Northeast	25.467	91.36
151	Meghalaya	31-03-2020	M	1.58	1482351	64.74	Northeast	25.467	91.36
152	Meghalaya	30-04-2020	M	10.03	965057	45.99	Northeast	25.467	91.36
153	Meghalaya	31-05-2020	M	5.92	1215064	55.24	Northeast	25.467	91.36
154	Meghalaya	30-06-2020	M	1.15	1350794	58.31	Northeast	25.467	91.36
155	Meghalaya	31-07-2020	M	2.10	1448106	62.96	Northeast	25.467	91.36
156	Meghalaya	31-08-2020	M	3.74	1357643	59.88	Northeast	25.467	91.36
157	Meghalaya	30-09-2020	M	4.29	1459726	64.60	Northeast	25.467	91.36
158	Meghalaya	31-10-2020	M	4.60	1381490	61.18	Northeast	25.467	91.36



In [62]:

```
x=Meghalaya["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=Meghalaya["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Meghalaya")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [63]: `odisa=df[160:169]`

```
odisa
```

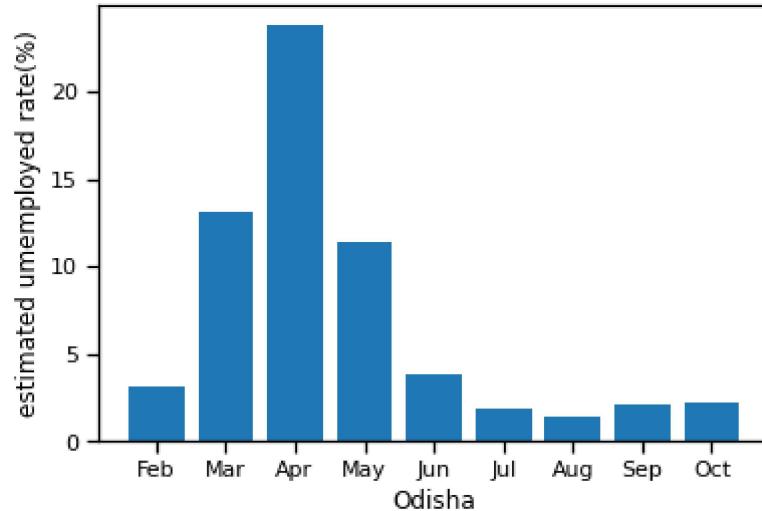
Out[63]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	M
160	Odisha		29-02-2020	M	3.12	14280735	41.44	East	20.9517	85.0985	
161	Odisha		31-03-2020	M	13.08	12272109	39.62	East	20.9517	85.0985	
162	Odisha		30-04-2020	M	23.76	6865693	25.23	East	20.9517	85.0985	
163	Odisha		31-05-2020	M	11.41	11730937	37.04	East	20.9517	85.0985	
164	Odisha		30-06-2020	M	3.77	12903993	37.45	East	20.9517	85.0985	
165	Odisha		31-07-2020	M	1.88	13614400	38.69	East	20.9517	85.0985	
166	Odisha		31-08-2020	M	1.42	14154039	39.96	East	20.9517	85.0985	
167	Odisha		30-09-2020	M	2.10	13608422	38.63	East	20.9517	85.0985	
168	Odisha		31-10-2020	M	2.18	14094553	39.98	East	20.9517	85.0985	



In [64]:

```
x=odisa["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=odisa["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Odisha")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [65]: Puducherry=df[170:179]

Puducherry

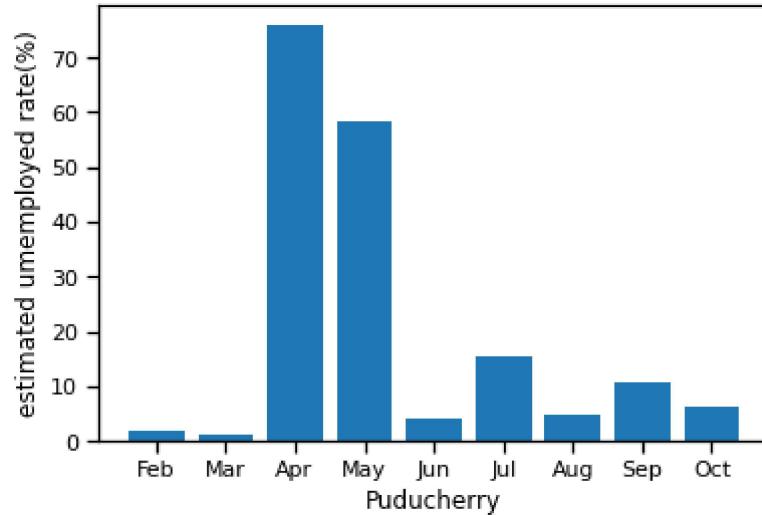
Out[65]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitud
170	Puducherry		29-02-2020	M	1.76	493961	40.80	South	11.9416	79.808
171	Puducherry		31-03-2020	M	1.20	421028	34.49	South	11.9416	79.808
172	Puducherry		30-04-2020	M	75.85	117542	39.30	South	11.9416	79.808
173	Puducherry		31-05-2020	M	58.19	172308	33.19	South	11.9416	79.808
174	Puducherry		30-06-2020	M	4.24	367135	30.80	South	11.9416	79.808
175	Puducherry		31-07-2020	M	15.47	386563	36.64	South	11.9416	79.808
176	Puducherry		31-08-2020	M	5.05	396006	33.34	South	11.9416	79.808
177	Puducherry		30-09-2020	M	10.90	411717	36.84	South	11.9416	79.808
178	Puducherry		31-10-2020	M	6.18	428419	36.32	South	11.9416	79.808



In [66]:

```
x=Puducherry[ "Month_name" ]  
months=[ "jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct" ]  
y=Puducherry[ "estimated umemployed rate(%)" ]  
plt.bar(x,y)  
plt.xlabel("Puducherry")  
plt.ylabel("estimated umemployed rate(%)")  
plt.show()
```



In [67]: `punjab=df[180:189]`

`punjab`

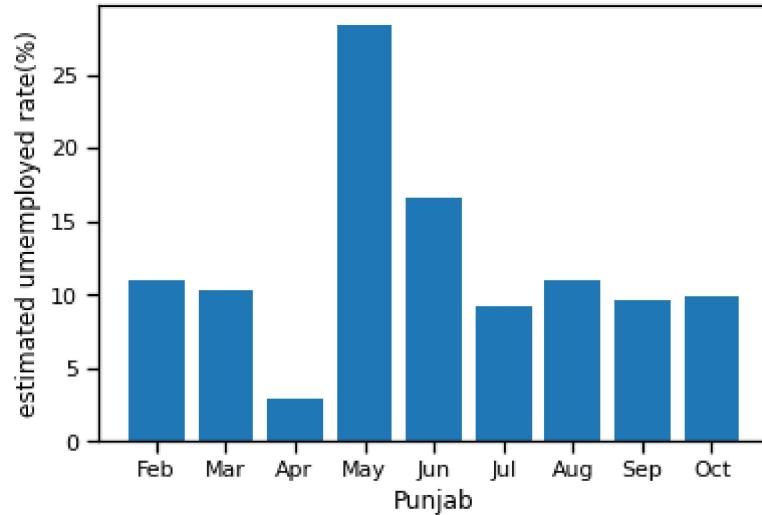
Out[67]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	M
180	Punjab	29-02-2020	M	10.97	9229047	41.72	North	31.1471	75.3412	
181	Punjab	31-03-2020	M	10.32	9975485	44.69	North	31.1471	75.3412	
182	Punjab	30-04-2020	M	2.86	7020565	28.99	North	31.1471	75.3412	
183	Punjab	31-05-2020	M	28.33	6872938	38.39	North	31.1471	75.3412	
184	Punjab	30-06-2020	M	16.55	8390766	40.18	North	31.1471	75.3412	
185	Punjab	31-07-2020	M	9.19	9732417	42.76	North	31.1471	75.3412	
186	Punjab	31-08-2020	M	10.99	9386169	41.99	North	31.1471	75.3412	
187	Punjab	30-09-2020	M	9.61	8980432	39.50	North	31.1471	75.3412	
188	Punjab	31-10-2020	M	9.88	8800430	38.75	North	31.1471	75.3412	



In [68]:

```
x=punjab["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=punjab["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Punjab")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [69]: `rajasthan=df[190:199]`
`rajasthan`

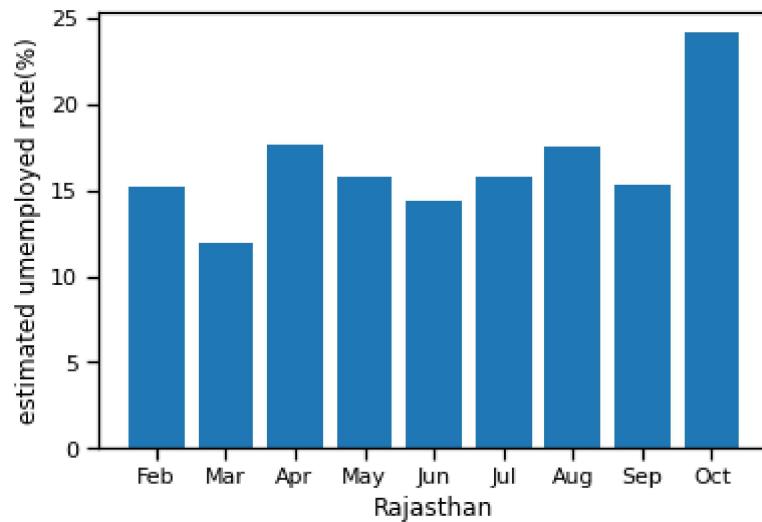
Out[69]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
190	Rajasthan		29-02-2020	M	15.16	20328915	41.77	North	27.0238	74.2179
191	Rajasthan		31-03-2020	M	11.90	20024680	39.54	North	27.0238	74.2179
192	Rajasthan		30-04-2020	M	17.70	15984142	33.71	North	27.0238	74.2179
193	Rajasthan		31-05-2020	M	15.74	19826602	40.74	North	27.0238	74.2179
194	Rajasthan		30-06-2020	M	14.39	20506612	41.38	North	27.0238	74.2179
195	Rajasthan		31-07-2020	M	15.81	19932393	40.80	North	27.0238	74.2179
196	Rajasthan		31-08-2020	M	17.51	20014060	41.71	North	27.0238	74.2179
197	Rajasthan		30-09-2020	M	15.35	20149594	40.83	North	27.0238	74.2179
198	Rajasthan		31-10-2020	M	24.15	19908808	44.92	North	27.0238	74.2179



In [70]:

```
x=rajasthan["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=rajasthan["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Rajasthan")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```

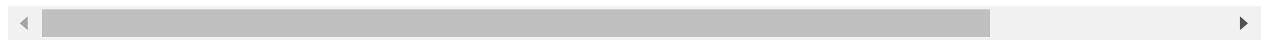


```
In [71]: sikkim=df[200:207]
```

```
sikkim
```

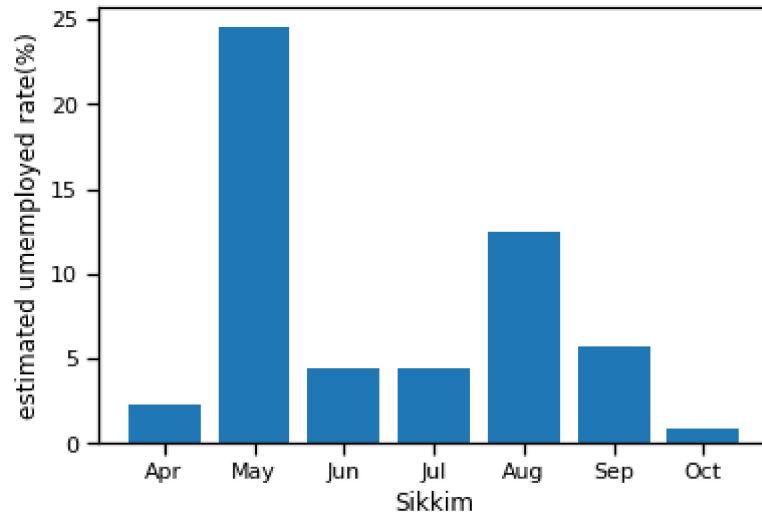
Out[71]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
200	Sikkim		30-04-2020	M	2.28	215303	38.70	Northeast	27.533	88.5122
201	Sikkim		31-05-2020	M	24.51	193427	44.88	Northeast	27.533	88.5122
202	Sikkim		30-06-2020	M	4.46	221058	40.40	Northeast	27.533	88.5122
203	Sikkim		31-07-2020	M	4.45	265175	48.32	Northeast	27.533	88.5122
204	Sikkim		31-08-2020	M	12.49	244462	48.49	Northeast	27.533	88.5122
205	Sikkim		30-09-2020	M	5.70	231798	42.54	Northeast	27.533	88.5122
206	Sikkim		31-10-2020	M	0.88	242068	42.13	Northeast	27.533	88.5122



In [72]:

```
x=sikkim["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=sikkim["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Sikkim")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [73]: `tamilnadu=df[207:217]`

`tamilnadu`

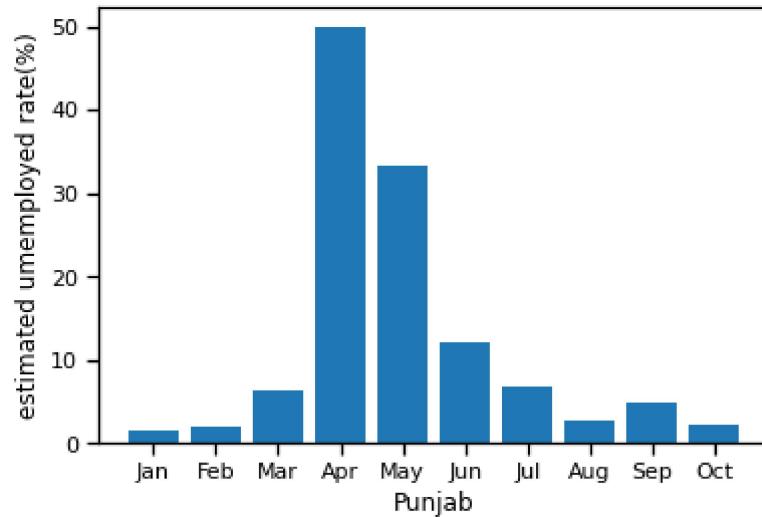
Out[73]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	Mc
207	Tamil Nadu	31-01-2020	M	1.57	26881641	41.96	South	11.1271	78.6569	
208	Tamil Nadu	29-02-2020	M	2.09	27570589	43.20	South	11.1271	78.6569	
209	Tamil Nadu	31-03-2020	M	6.40	26830768	43.91	South	11.1271	78.6569	
210	Tamil Nadu	30-04-2020	M	49.83	9719167	29.63	South	11.1271	78.6569	
211	Tamil Nadu	31-05-2020	M	33.16	11483256	26.23	South	11.1271	78.6569	
212	Tamil Nadu	30-06-2020	M	12.20	19096847	33.16	South	11.1271	78.6569	
213	Tamil Nadu	31-07-2020	M	6.81	24572827	40.13	South	11.1271	78.6569	
214	Tamil Nadu	31-08-2020	M	2.65	27046415	42.22	South	11.1271	78.6569	
215	Tamil Nadu	30-09-2020	M	5.00	23025845	36.77	South	11.1271	78.6569	
216	Tamil Nadu	31-10-2020	M	2.16	23651626	36.62	South	11.1271	78.6569	



In [74]:

```
x=tamilnadu["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=tamilnadu["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Punjab")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```



In [75]: telangana=df[217:227]

telangana

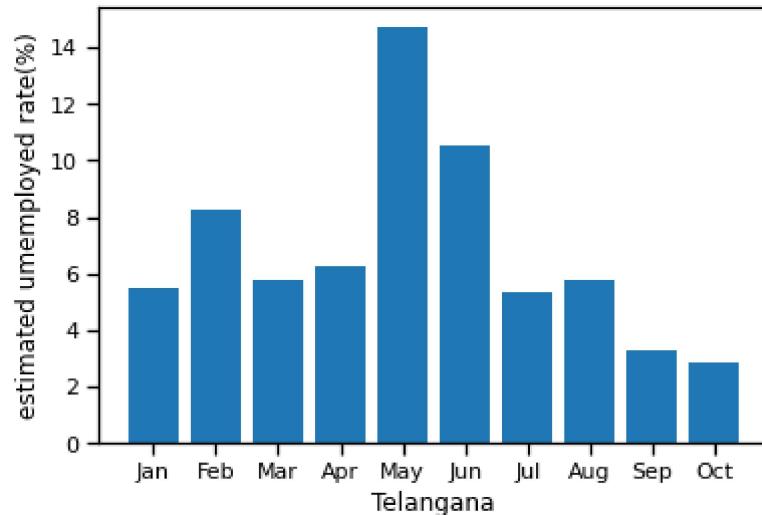
Out[75]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
217	Telangana	31-01-2020	M	5.49	17609295	59.25	South	18.1124	79.0193
218	Telangana	29-02-2020	M	8.29	16825970	58.24	South	18.1124	79.0193
219	Telangana	31-03-2020	M	5.77	17341613	58.31	South	18.1124	79.0193
220	Telangana	30-04-2020	M	6.25	12172230	41.06	South	18.1124	79.0193
221	Telangana	31-05-2020	M	14.70	14977774	55.43	South	18.1124	79.0193
222	Telangana	30-06-2020	M	10.55	15108910	53.22	South	18.1124	79.0193
223	Telangana	31-07-2020	M	5.36	15679417	52.10	South	18.1124	79.0193
224	Telangana	31-08-2020	M	5.79	18185429	60.59	South	18.1124	79.0193
225	Telangana	30-09-2020	M	3.27	16961448	54.94	South	18.1124	79.0193
226	Telangana	31-10-2020	M	2.86	17578739	56.58	South	18.1124	79.0193



In [76]:

```
x=telangana["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=telangana["estimated unemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Telangana")
plt.ylabel("estimated unemployed rate(%)")
plt.show()
```

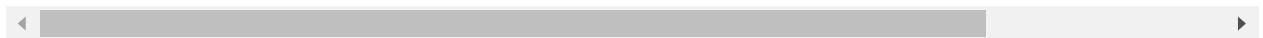


In [77]: `tripura=df[227:237]`

```
tripura
```

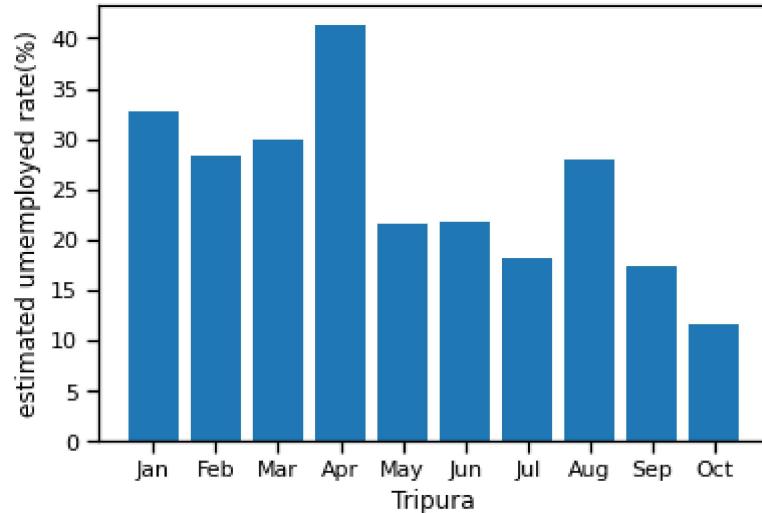
Out[77]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
227	Tripura	31-01-2020	M	32.67	1508130	69.69	Northeast	23.9408	91.9882
228	Tripura	29-02-2020	M	28.40	1584686	68.74	Northeast	23.9408	91.9882
229	Tripura	31-03-2020	M	29.95	1511217	66.89	Northeast	23.9408	91.9882
230	Tripura	30-04-2020	M	41.23	971514	51.16	Northeast	23.9408	91.9882
231	Tripura	31-05-2020	M	21.51	1290986	50.81	Northeast	23.9408	91.9882
232	Tripura	30-06-2020	M	21.71	1494140	58.85	Northeast	23.9408	91.9882
233	Tripura	31-07-2020	M	18.24	1348849	50.78	Northeast	23.9408	91.9882
234	Tripura	31-08-2020	M	27.92	1318621	56.21	Northeast	23.9408	91.9882
235	Tripura	30-09-2020	M	17.35	1368244	50.77	Northeast	23.9408	91.9882
236	Tripura	31-10-2020	M	11.57	1576529	54.58	Northeast	23.9408	91.9882



In [78]:

```
x=tripura["Month_name"]
#months=["jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=tripura["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Tripura")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [79]: `UttarPradesh=df[237:247]`

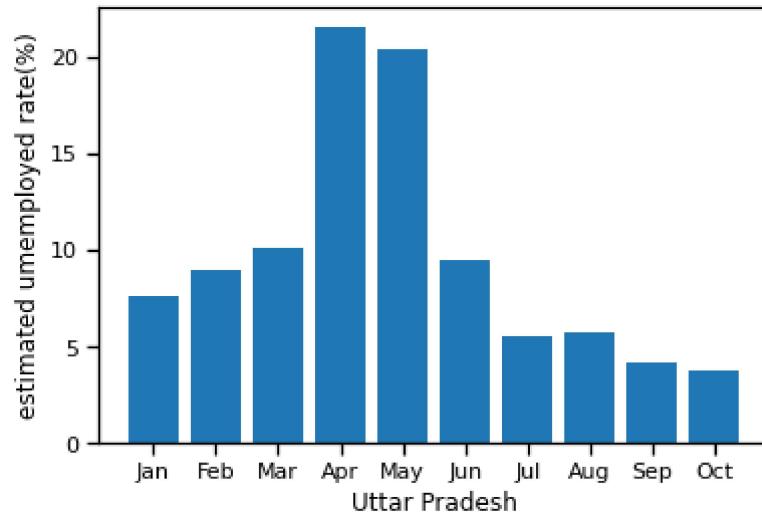
`UttarPradesh`

Out[79]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
237		Uttar Pradesh	31- 01- 2020	M	7.58	59433759	39.63	North	26.8467	80.9462
238		Uttar Pradesh	29- 02- 2020	M	8.98	58060531	39.23	North	26.8467	80.9462
239		Uttar Pradesh	31- 03- 2020	M	10.11	56976338	38.89	North	26.8467	80.9462
240		Uttar Pradesh	30- 04- 2020	M	21.54	50915056	39.73	North	26.8467	80.9462
241		Uttar Pradesh	31- 05- 2020	M	20.41	49801902	38.22	North	26.8467	80.9462
242		Uttar Pradesh	30- 06- 2020	M	9.47	55380649	37.29	North	26.8467	80.9462
243		Uttar Pradesh	31- 07- 2020	M	5.56	56201654	36.19	North	26.8467	80.9462
244		Uttar Pradesh	31- 08- 2020	M	5.79	55831744	35.96	North	26.8467	80.9462
245		Uttar Pradesh	30- 09- 2020	M	4.18	56106836	35.45	North	26.8467	80.9462
246		Uttar Pradesh	31- 10- 2020	M	3.75	56539521	35.49	North	26.8467	80.9462



```
In [80]: x=UttarPradesh[ "Month_name"]
#months=[ "jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct"]
y=UttarPradesh[ "estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("Uttar Pradesh")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



In [81]: `Utharakhand=df[247:257]`

Utharakhand

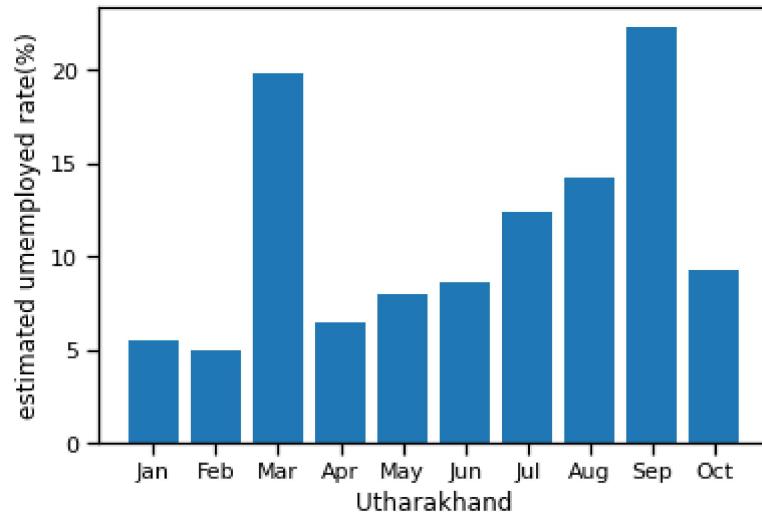
Out[81]:

		state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude
247	Uttarakhand		31-01-2020	M	5.49	2711639	32.99	North	30.0668	79.018
248	Uttarakhand		29-02-2020	M	4.99	3020931	36.48	North	30.0668	79.018
249	Uttarakhand		31-03-2020	M	19.85	2539302	36.27	North	30.0668	79.018
250	Uttarakhand		30-04-2020	M	6.48	2720115	33.23	North	30.0668	79.018
251	Uttarakhand		31-05-2020	M	8.01	2694072	33.38	North	30.0668	79.018
252	Uttarakhand		30-06-2020	M	8.61	2656071	33.06	North	30.0668	79.018
253	Uttarakhand		31-07-2020	M	12.38	2938552	38.07	North	30.0668	79.018
254	Uttarakhand		31-08-2020	M	14.26	2717528	35.90	North	30.0668	79.018
255	Uttarakhand		30-09-2020	M	22.26	2695230	39.18	North	30.0668	79.018
256	Uttarakhand		31-10-2020	M	9.23	2739309	34.03	North	30.0668	79.018



In [82]:

```
x=Utharakhand[ "Month_name" ]  
#months=[ "jan", "feb", "march", "april", "may", "june", "july", "aug", "sep", "oct" ]  
y=Utharakhand[ "estimated umemployed rate(%)" ]  
plt.bar(x,y)  
plt.xlabel("Utharakhand")  
plt.ylabel("estimated umemployed rate(%)")  
plt.show()
```

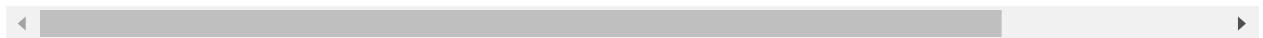


In [83]: `westbengal=df[257:267]`

```
westbengal
```

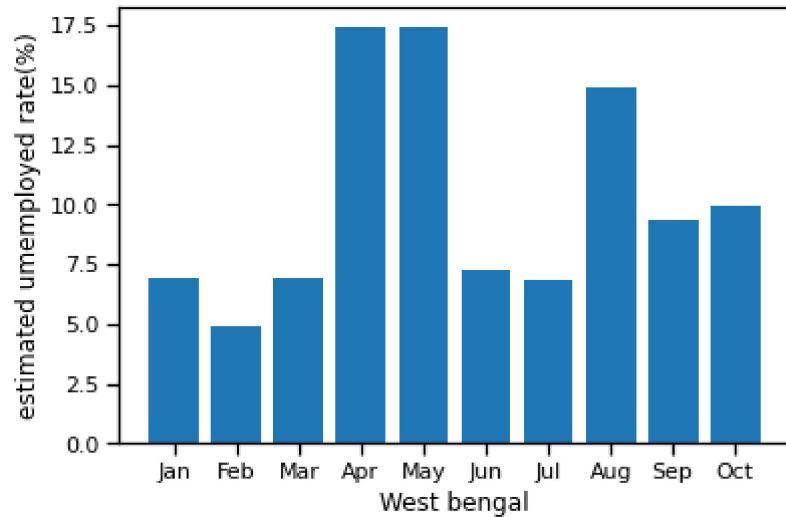
Out[83]:

	state	Date	frequency	estimated unemployed rate(%)	estimated employed	estimated labour participation rate(%)	Region	longitude	latitude	N
257	West Bengal	31-01-2020	M	6.94	35820789	47.35	East	22.9868	87.855	
258	West Bengal	29-02-2020	M	4.92	36964178	47.74	East	22.9868	87.855	
259	West Bengal	31-03-2020	M	6.92	35903917	47.27	East	22.9868	87.855	
260	West Bengal	30-04-2020	M	17.41	26938836	39.90	East	22.9868	87.855	
261	West Bengal	31-05-2020	M	17.41	28356675	41.92	East	22.9868	87.855	
262	West Bengal	30-06-2020	M	7.29	30726310	40.39	East	22.9868	87.855	
263	West Bengal	31-07-2020	M	6.83	35372506	46.17	East	22.9868	87.855	
264	West Bengal	31-08-2020	M	14.87	33298644	47.48	East	22.9868	87.855	
265	West Bengal	30-09-2020	M	9.35	35707239	47.73	East	22.9868	87.855	
266	West Bengal	31-10-2020	M	9.98	33962549	45.63	East	22.9868	87.855	



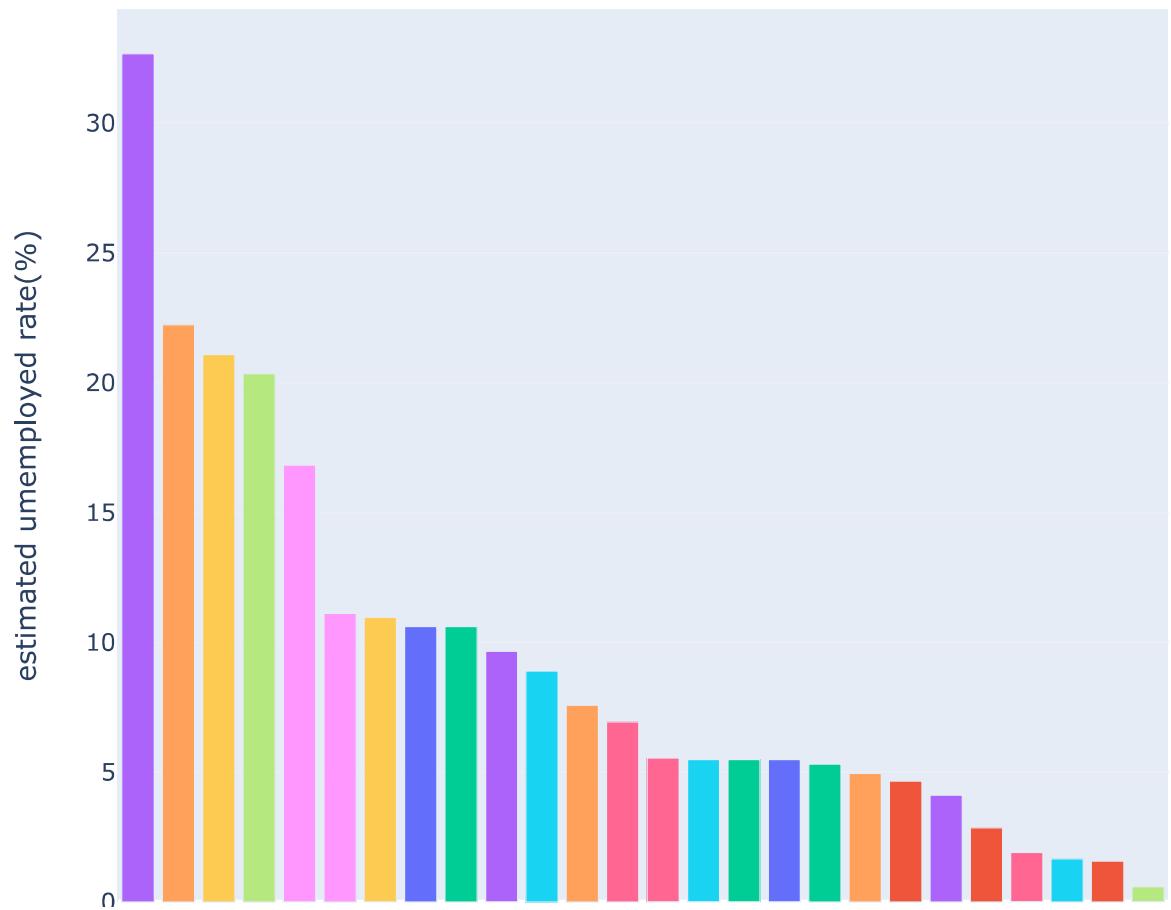
In [84]:

```
x=westbengal["Month_name"]
#months=["jan","feb","march","april","may","june","july","aug","sep","oct"]
y=westbengal["estimated umemployed rate(%)"]
plt.bar(x,y)
plt.xlabel("West bengal")
plt.ylabel("estimated umemployed rate(%)")
plt.show()
```



```
In [85]: fig = px.bar(df, x='state',y='estimated unemployed rate(%)',animation_frame = 'Mo  
title='Unemployment rate across region from Jan.2020 to Oct.2020', he  
fig.update_layout(xaxis={'categoryorder':'total descending'})  
fig.layout.updatemenus[0].buttons[0].args[1]["frame"]["duration"] = 2000  
fig.show()
```

Unemployment rate across region from Jan.2020 to Oct.2020



```
In [86]: unemplo_df = df[['state','Region','estimated unemployed rate(%)','estimated emplo...  
unemplo = unemplo_df.groupby(['Region','state'])['estimated unemployed rate(%)'].sum()  
unemplo
```

Out[86]:

	Region	state	estimated unemployed rate(%)
0	East	Andhra Pradesh	NaN
1	East	Assam	NaN
2	East	Bihar	19.471
3	East	Chhattisgarh	NaN
4	East	Delhi	NaN
...
130	West	Telangana	NaN
131	West	Tripura	NaN
132	West	Uttar Pradesh	NaN
133	West	Uttarakhand	NaN
134	West	West Bengal	NaN

135 rows × 3 columns

```
In [87]: fig = px.sunburst(unemplo, path=['Region','state'], values='estimated unemployed',
                         color_continuous_scale='Plasma',title= 'unemployment rate in each region and state',
                         height=650,template='ggplot2')

fig.show()
```

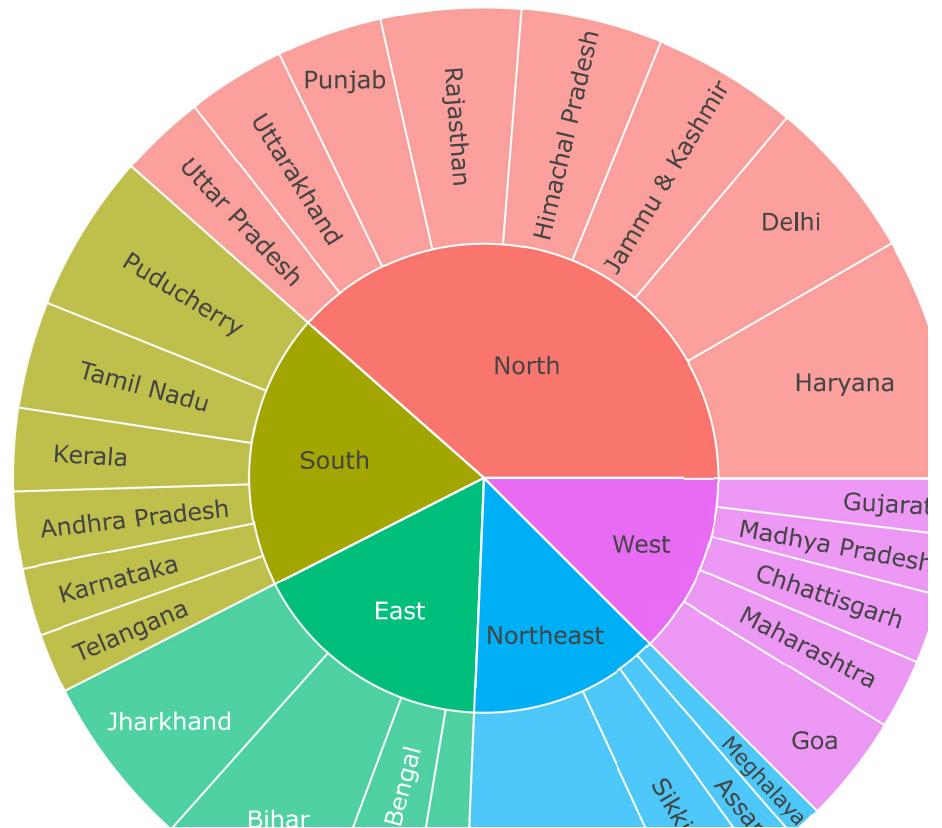
F:\anaconda\lib\site-packages\plotly\express_core.py:1637: FutureWarning:

The frame.append method is deprecated and will be removed from pandas in a future version. Use pandas.concat instead.

F:\anaconda\lib\site-packages\plotly\express_core.py:1637: FutureWarning:

The frame.append method is deprecated and will be removed from pandas in a future version. Use pandas.concat instead.

unemployment rate in each region and state



Impact of Lockdown on States Estimated Employed

#On 24 March 2020, the Government of India under Prime Minister Narendra Modi ordered a nationwide lockdown for 21 days

In [88]:

```
fig = px.scatter_geo(df, 'longitude', 'latitude', color="Region",
                     hover_name="state", size="estimated unemployed rate(%)",
                     animation_frame="Month_name", scope='asia', template='plotly',
                     fig.layout.updatemenus[0].buttons[0].args[1]["frame"]["duration"] = 2000
                     fig.update_geos(lataxis_range=[5,35], lonaxis_range=[65, 100],oceancolor="#6dd5ec",
                     showocean=True)
                     fig.show()
```

Impack of lockdown on employmenat across regions

In [89]:

```
lock = df[(df['Month_int'] >= 4) & (df['Month_int'] <=7)]
bf_lock = df[(df['Month_int'] >= 1) & (df['Month_int'] <=4)]
```

In [90]:

```
g_lock = lock.groupby('state')['estimated unemployed rate(%)'].mean().reset_index()
g_bf_lock = bf_lock.groupby('state')['estimated unemployed rate(%)'].mean().reset_index()

g_lock['Unemployment Rate before lockdown'] = g_bf_lock['estimated unemployed rate(%)']
g_lock.columns = ['States', 'Unemployment Rate after lockdown', 'Unemployment Rate before lockdown']
g_lock.head(2)
```

Out[90]:

	States	Unemployment Rate after lockdown	Unemployment Rate before lockdown
--	--------	----------------------------------	-----------------------------------

0	Andhra Pradesh	12.3975	9.4025
1	Assam	6.2450	6.2250

percentage change in unemployment rate

In [91]:

```
g_lock['percentage change in unemployment'] = round(g_lock['Unemployment Rate after lockdown'] - g_lock['Unemployment Rate before lockdown']) / g_lock['Unemployment Rate before lockdown'] * 100
```

```
In [92]: plot_per = g_lock.sort_values('percentage change in unemployment')
plot_per
```

Out[92]:

	States	Unemployment Rate after lockdown	Unemployment Rate before lockdown	percentage change in unemployment
15	Meghalaya	4.800000	4.2150	3.80
1	Assam	6.245000	6.2250	5.24
25	Uttarakhand	8.870000	9.2025	7.87
20	Sikkim	8.925000	12.9250	7.93
6	Gujarat	8.965000	9.3225	7.96
22	Telangana	9.215000	6.4500	8.22
3	Chhattisgarh	9.602500	7.2450	8.60
16	Odisha	10.205000	10.4650	9.20
13	Madhya Pradesh	11.475000	5.8150	10.48
26	West Bengal	12.235000	9.0475	11.24
14	Maharashtra	12.370000	9.0825	11.37
0	Andhra Pradesh	12.397500	9.4025	11.40
12	Kerala	12.917500	9.7225	11.92
18	Punjab	14.232500	8.8150	13.23
24	Uttar Pradesh	14.245000	12.0525	13.24
5	Goa	15.397500	7.5650	14.40
11	Karnataka	15.565000	9.9425	14.56
9	Jammu & Kashmir	15.846667	19.1200	14.85
19	Rajasthan	15.910000	13.9325	14.91
8	Himachal Pradesh	16.732500	13.6575	15.73
4	Delhi	24.360000	17.6975	23.36
21	Tamil Nadu	25.500000	14.9725	24.50
23	Tripura	25.672500	33.0625	24.67
7	Haryana	30.780000	28.5950	29.78
2	Bihar	30.802500	20.7425	29.80
10	Jharkhand	33.725000	19.4450	32.72
17	Puducherry	38.437500	19.8475	37.44

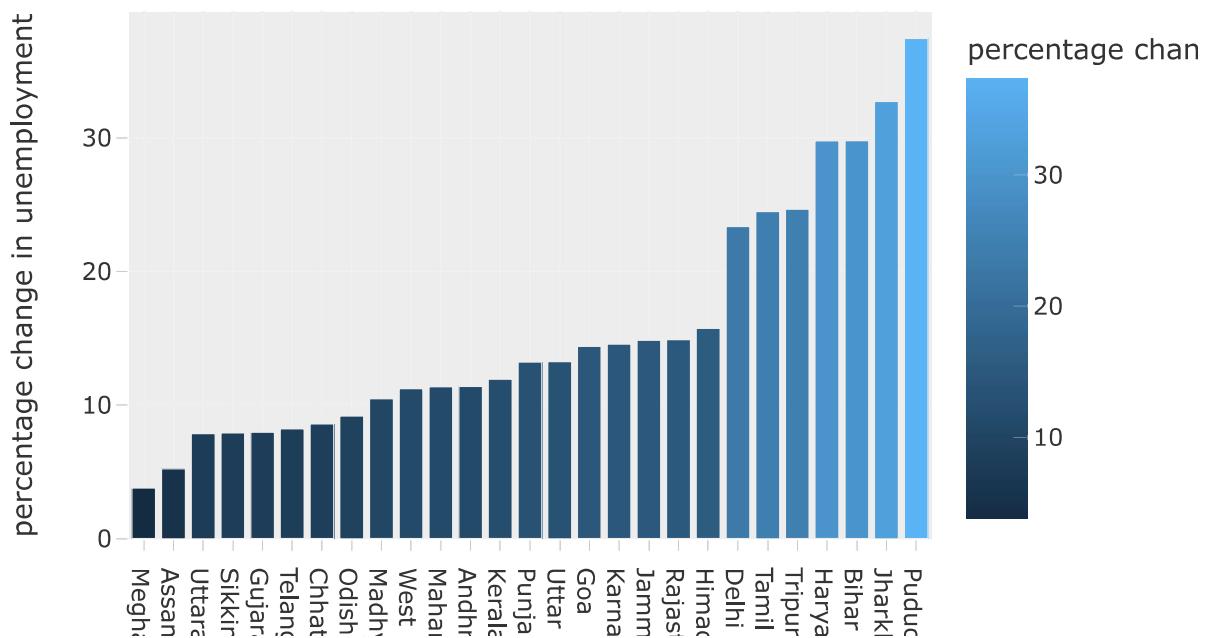
percentage change in unemployment after lockdown

In [93]:

```
fig = px.bar(plot_per,x='States',y='percentage change in unemployment',color='per
title='percentage change in Unemployment in each state after lockdown

fig.show()
```

percentage change in Unemployment in each state after lockdown



Most impacted states/UT

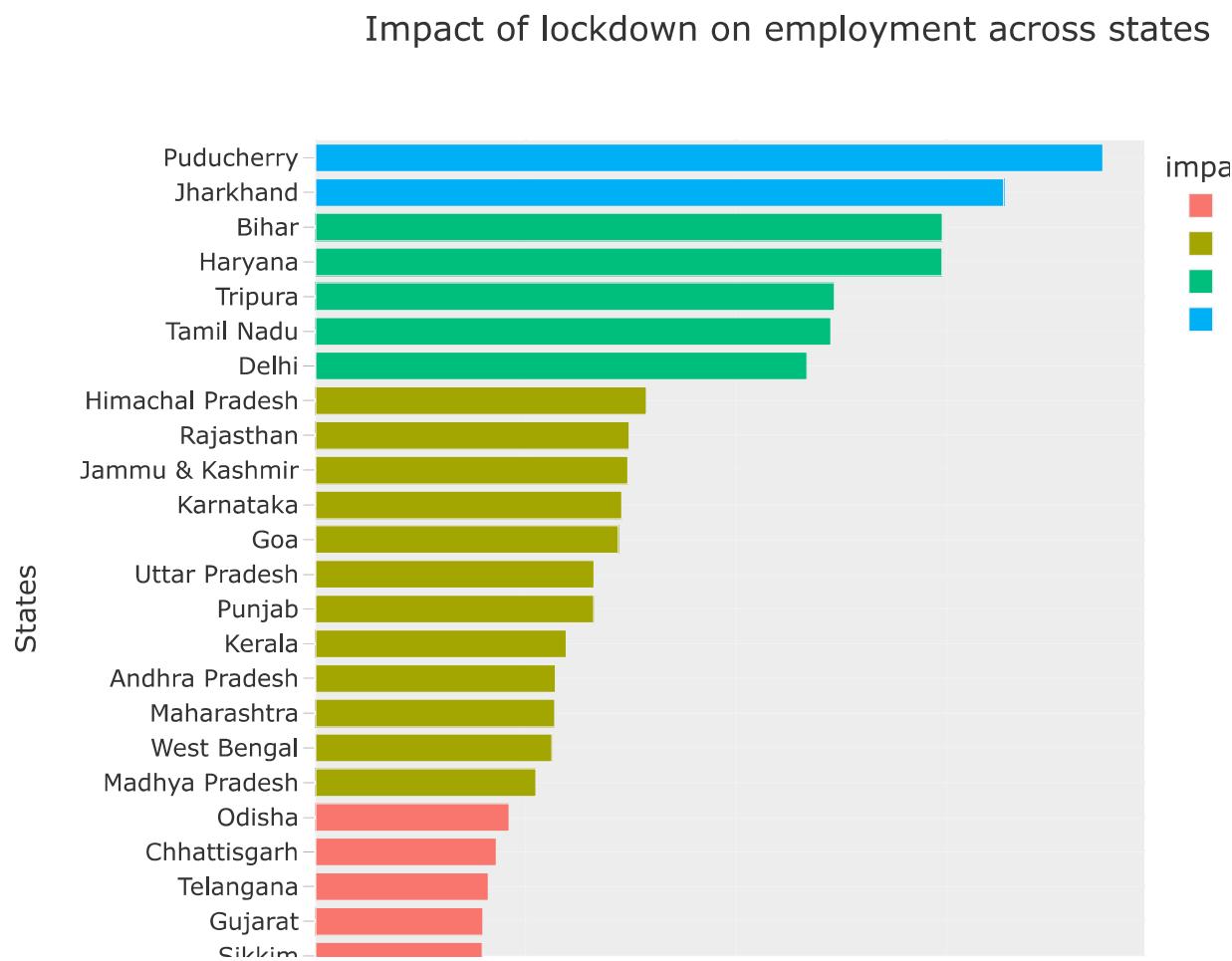
- Puducherry
- Jharkhand
- Bihar
- Haryana
- Tripura

Function to sort value based on impact

In [94]:

```
def sort_impact(x):
    if x <= 10:
        return 'impacted States'
    elif x <= 20:
        return 'hard impacted States'
    elif x <= 30:
        return 'harder impacted States'
    elif x <= 40:
        return 'hardest impacted States'
    return x
plot_per['impact status'] = plot_per['percentage change in unemployment'].apply(sort_impact)
```

```
In [95]: fig = px.bar(plot_per, y='States',x='percentage change in unemployment',color='impa  
title='Impact of lockdown on employment across states',template='ggp  
  
fig.show()
```



```
In [ ]:
```