[1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

[2]:
```
df=pd.read_csv("covid_vaccine_statewise.csv")
df
```

[2]:

	Updated On	State	Total Doses Administered	Sessions	Sites	First Dose Administered	Second Dose Administered	Male (Doses Administered)	Female (Doses Administered)	Transgender (Doses Administered)	...	18-44 Years (Doses Administered)	45-60 Years (Doses Administered)
0	16/01/2021	India	48276.0	3455.0	2957.0	48276.0	0.0	NaN	NaN	NaN	...	NaN	NaN
1	17/01/2021	India	58604.0	8532.0	4954.0	58604.0	0.0	NaN	NaN	NaN	...	NaN	NaN
2	18/01/2021	India	99449.0	13611.0	6583.0	99449.0	0.0	NaN	NaN	NaN	...	NaN	NaN
3	19/01/2021	India	195525.0	17855.0	7951.0	195525.0	0.0	NaN	NaN	NaN	...	NaN	NaN
4	20/01/2021	India	251280.0	25472.0	10504.0	251280.0	0.0	NaN	NaN	NaN	...	NaN	NaN
...	...	...	...	...	...	...	...	...	...	...	...	...	...
7840	11/08/2021	West Bengal	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN
7841	12/08/2021	West Bengal	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN
7842	13/08/2021	West Bengal	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN
7843	14/08/2021	West Bengal	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN
7844	15/08/2021	West Bengal	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN

[3]:
```
df.head()
```

[3]:

	Updated On	State	Total Doses Administered	Sessions	Sites	First Dose Administered	Second Dose Administered	Male (Doses Administered)	Female (Doses Administered)	Transgender (Doses Administered)	...	18-44 Years (Doses Administered)	45-60 Years (Doses Administered)	Adı
0	16/01/2021	India	48276.0	3455.0	2957.0	48276.0	0.0	NaN	NaN	NaN	...	NaN	NaN	
1	17/01/2021	India	58604.0	8532.0	4954.0	58604.0	0.0	NaN	NaN	NaN	...	NaN	NaN	
2	18/01/2021	India	99449.0	13611.0	6583.0	99449.0	0.0	NaN	NaN	NaN	...	NaN	NaN	
3	19/01/2021	India	195525.0	17855.0	7951.0	195525.0	0.0	NaN	NaN	NaN	...	NaN	NaN	
4	20/01/2021	India	251280.0	25472.0	10504.0	251280.0	0.0	NaN	NaN	NaN	...	NaN	NaN	

5 rows × 24 columns

[4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7845 entries, 0 to 7844
Data columns (total 24 columns):
 #   Column                             Non-Null Count  Dtype
---  ------                             --------------  -----
 0   Updated On                         7845 non-null   object
 1   State                              7845 non-null   object
 2   Total Doses Administered           7621 non-null   float64
 3   Sessions                           7621 non-null   float64
 4    Sites                             7621 non-null   float64
 5   First Dose Administered            7621 non-null   float64
 6   Second Dose Administered           7621 non-null   float64
 7   Male (Doses Administered)          7461 non-null   float64
 8   Female (Doses Administered)        7461 non-null   float64
 9   Transgender (Doses Administered)   7461 non-null   float64
 10   Covaxin (Doses Administered)      7621 non-null   float64
 11  CoviShield (Doses Administered)    7621 non-null   float64
 12  Sputnik V (Doses Administered)     2995 non-null   float64
```

[5]:
```
df.describe()
```

[5]:

	Total Doses Administered	Sessions	Sites	First Dose Administered	Second Dose Administered	Male (Doses Administered)	Female (Doses Administered)	Transgender (Doses Administered)	Covaxin (Doses Administered)	CoviShield (Doses Administered)	...	18-44 (Adminis
count	7.621000e+03	7.621000e+03	7621.000000	7.621000e+03	7.621000e+03	7.461000e+03	7.461000e+03	7461.000000	7.621000e+03	7.621000e+03	...	1.70200
mean	9.188171e+06	4.792358e+05	2282.872064	7.414415e+06	1.773755e+06	3.620156e+06	3.168416e+06	1162.978019	1.044669e+06	8.126553e+06	...	8.77395
std	3.746180e+07	1.911511e+06	7275.973730	2.995209e+07	7.570382e+06	1.737938e+07	1.515310e+07	5931.353995	4.452259e+06	3.298414e+07	...	2.66082
min	7.000000e+00	0.000000e+00	0.000000	7.000000e+00	0.000000e+00	0.000000e+00	2.000000e+00	0.000000	0.000000e+00	7.000000e+00	...	2.66240
25%	1.356570e+05	6.004000e+03	69.000000	1.166320e+05	1.283100e+04	5.655500e+04	5.210700e+04	8.000000	0.000000e+00	1.331340e+05	...	4.34484
50%	8.182020e+05	4.547000e+04	597.000000	6.614590e+05	1.388180e+05	3.897850e+05	3.342380e+05	113.000000	1.185100e+04	7.567360e+05	...	3.09597
75%	6.625243e+06	3.428690e+05	1708.000000	5.387805e+06	1.166434e+06	2.735777e+06	2.561513e+06	800.000000	7.579300e+05	6.007817e+06	...	7.36624
max	5.132284e+08	3.501031e+07	73933.000000	4.001504e+08	1.130780e+08	2.701636e+08	2.395186e+08	98275.000000	6.236742e+07	4.468251e+08	...	2.24330

8 rows × 22 columns

[6]:
```
df.columns
```

[6]:
```
Index(['Updated On', 'State', 'Total Doses Administered', 'Sessions',
       ' Sites ', 'First Dose Administered', 'Second Dose Administered',
       'Male (Doses Administered)', 'Female (Doses Administered)',
       'Transgender (Doses Administered)', ' Covaxin (Doses Administered)',
       'CoviShield (Doses Administered)', 'Sputnik V (Doses Administered)',
       'AEFI', '18-44 Years (Doses Administered)',
       '45-60 Years (Doses Administered)', '60+ Years (Doses Administered)',
       '18-44 Years(Individuals Vaccinated)',
       '45-60 Years(Individuals Vaccinated)',
       '60+ Years(Individuals Vaccinated)', 'Male(Individuals Vaccinated)',
       'Female(Individuals Vaccinated)', 'Transgender(Individuals Vaccinated)',
```

dtype= object)

[7]:
```
df.isnull().sum()
```

[7]:
```
Updated On                            0
State                                 0
Total Doses Administered            224
Sessions                            224
 Sites                              224
First Dose Administered             224
Second Dose Administered            224
Male (Doses Administered)           384
Female (Doses Administered)         384
Transgender (Doses Administered)    384
 Covaxin (Doses Administered)       224
CoviShield (Doses Administered)     224
Sputnik V (Doses Administered)     4850
AEFI                               2407
18-44 Years (Doses Administered)   6143
45-60 Years (Doses Administered)   6143
60+ Years (Doses Administered)     6143
18-44 Years(Individuals Vaccinated)  4112
45-60 Years(Individuals Vaccinated)  4111
60+ Years(Individuals Vaccinated)    4111
Male(Individuals Vaccinated)         7685
Female(Individuals Vaccinated)       7685
Transgender(Individuals Vaccinated)  7685
Total Individuals Vaccinated         1926
dtype: int64
```

[8]:
```
avg_firstdose=df['First Dose Administered'].mean(axis=0)
print("the average of first dose is :",avg_firstdose)
```

```
the average of first dose is : 7414415.300354284
```

[9]:
```
avg_seconddose=df['Second Dose Administered'].mean(axis=0)
print("the average os second dose is :",avg_seconddose)
```

```
the average os second dose is : 1773755.2436688098
```

[10]:
```
first_dose=df.groupby('State')[['First Dose Administered']].sum()
first_dose
```

[10]:

State	First Dose Administered
Andaman and Nicobar Islands	1.642585e+07
Andhra Pradesh	1.232861e+09
Arunachal Pradesh	4.900498e+07
Assam	5.856002e+08
Bihar	1.470503e+09
Chandigarh	4.470310e+07
Chhattisgarh	7.960029e+08
Dadra and Nagar Haveli and Daman and Diu	3.359506e+07
Delhi	6.243395e+08
Goa	7.599137e+07
Gujarat	2.131646e+09
Haryana	7.557984e+08
Himachal Pradesh	3.162940e+08
India	2.826214e+10
Jammu and Kashmir	4.101018e+08
Jharkhand	6.036737e+08

[11]:
```
second_dose=df.groupby('State')[['Second Dose Administered']].sum()
second_dose
```

[11]:

State	Second Dose Administered
Andaman and Nicobar Islands	4.118554e+06
Andhra Pradesh	3.588176e+08
Arunachal Pradesh	1.193232e+07
Assam	1.307888e+08
Bihar	2.707906e+08
Chandigarh	1.159374e+07
Chhattisgarh	1.721204e+08
Dadra and Nagar Haveli and Daman and Diu	4.594416e+06
Delhi	1.882189e+08
Goa	1.619817e+07
Gujarat	6.004184e+08
Haryana	1.586561e+08
Himachal Pradesh	7.383858e+07
India	6.759621e+09
Jammu and Kashmir	8.595165e+07
Jharkhand	1.221211e+08
Karnataka	4.271872e+08
Kerala	3.640488e+08

Puducherry	8.608859e+06
Punjab	1.211210e+09
Rajasthan	4.917030e+08
Sikkim	9.723640e+06
Tamil Nadu	2.906706e+08
Telangana	1.981529e+08
Tripura	6.527014e+07
Uttar Pradesh	5.544351e+09
Uttarakhand	1.000850e+08
West Bengal	5.861469e+08

[12]:
```
male=df['Male (Doses Administered)'].sum()
int(male)
```

[12]: 27009983996

[13]:
```
female=df['Female (Doses Administered)'].sum()
int(female)
```

[13]: 23639554465

[ ]: