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

```python
df=pd.read_csv("covid_vaccine_statewise.csv")
df
```

	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

```python
df.head()
```

	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)	Adr
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

```python
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()
```

	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
```

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

[11]:

	Second Dose Administered
State	
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+08
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+08
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

[ ]: