mini-project

May 15, 2023

[1]:
```
import numpy as np
import pandas as pd
import warnings
warnings.filterwarnings("ignore")
df=pd.read_csv("covid_vaccine_statewise.csv")
```

[2]:
```
df.describe()
```

[2]:

	Total Doses Administered	Sessions	Sites
count	7.621000e+03	7.621000e+03	7621.000000
mean	9.188171e+06	4.792358e+05	2282.872064
std	3.746180e+07	1.911511e+06	7275.973730
min	7.000000e+00	0.000000e+00	0.000000
25%	1.356570e+05	6.004000e+03	69.000000
50%	8.182020e+05	4.547000e+04	597.000000
75%	6.625243e+06	3.428690e+05	1708.000000
max	5.132284e+08	3.501031e+07	73933.000000

	First Dose Administered	Second Dose Administered
count	7.621000e+03	7.621000e+03
mean	7.414415e+06	1.773755e+06
std	2.995209e+07	7.570382e+06
min	7.000000e+00	0.000000e+00
25%	1.166320e+05	1.283100e+04
50%	6.614590e+05	1.388180e+05
75%	5.387805e+06	1.166434e+06
max	4.001504e+08	1.130780e+08

	Male (Doses Administered)	Female (Doses Administered)
count	7.461000e+03	7.461000e+03
mean	3.620156e+06	3.168416e+06
std	1.737938e+07	1.515310e+07
min	0.000000e+00	2.000000e+00
25%	5.655500e+04	5.210700e+04
50%	3.897850e+05	3.342380e+05
75%	2.735777e+06	2.561513e+06
max	2.701636e+08	2.395186e+08

	Transgender (Doses Administered)	Covaxin (Doses Administered)	\
count	7461.000000	7.621000e+03	
mean	1162.978019	1.044669e+06	
std	5931.353995	4.452259e+06	
min	0.000000	0.000000e+00	
25%	8.000000	0.000000e+00	
50%	113.000000	1.185100e+04	
75%	800.000000	7.579300e+05	
max	98275.000000	6.236742e+07	

	CoviShield (Doses Administered)	…	18-44 Years (Doses Administered)	\
count	7.621000e+03	…	1.702000e+03	
mean	8.126553e+06	…	8.773958e+06	
std	3.298414e+07	…	2.660829e+07	
min	7.000000e+00	…	2.662400e+04	
25%	1.331340e+05	…	4.344842e+05	
50%	7.567360e+05	…	3.095970e+06	
75%	6.007817e+06	…	7.366241e+06	
max	4.468251e+08	…	2.243304e+08	

	45-60 Years (Doses Administered)	60+ Years (Doses Administered)	\
count	1.702000e+03	1.702000e+03	
mean	7.442161e+06	5.641605e+06	
std	2.225999e+07	1.681650e+07	
min	1.681500e+04	9.994000e+03	
25%	2.326275e+05	1.285605e+05	
50%	2.695938e+06	1.805696e+06	
75%	6.969726e+06	5.294763e+06	
max	1.667575e+08	1.186927e+08	

	18-44 Years(Individuals Vaccinated)	\
count	3.733000e+03	
mean	1.395895e+06	
std	5.501454e+06	
min	1.059000e+03	
25%	5.655400e+04	
50%	2.947270e+05	
75%	9.105160e+05	
max	9.224315e+07	

	45-60 Years(Individuals Vaccinated)	60+ Years(Individuals Vaccinated)	\
count	3.734000e+03	3.734000e+03	
mean	2.916515e+06	2.627444e+06	
std	9.567607e+06	8.192225e+06	
min	1.136000e+03	5.580000e+02	
25%	9.248225e+04	5.615975e+04	

```
50%                          8.330395e+05                          7.887425e+05
75%                          2.499280e+06                          2.337874e+06
max                          9.096888e+07                          6.731098e+07

       Male(Individuals Vaccinated)  Female(Individuals Vaccinated)  \
count                  1.600000e+02                    1.600000e+02
mean                   4.461687e+07                    3.951018e+07
std                    3.950749e+07                    3.417684e+07
min                    2.375700e+04                    2.451700e+04
25%                    5.739350e+06                    5.023407e+06
50%                    3.716590e+07                    3.365402e+07
75%                    7.441663e+07                    6.685368e+07
max                    1.349420e+08                    1.156684e+08

       Transgender(Individuals Vaccinated)  Total Individuals Vaccinated
count                           160.000000                  5.919000e+03
mean                          12370.543750                  4.547842e+06
std                           12485.026753                  1.834182e+07
min                               2.000000                  7.000000e+00
25%                            1278.750000                  7.427550e+04
50%                            8007.500000                  4.022880e+05
75%                           19851.000000                  3.501562e+06
max                           46462.000000                  2.506569e+08

[8 rows x 22 columns]
```

[3]:
```
print("Number of persons state wise vaccinated for first dose in India")
first_dose = df.groupby('State')[['First Dose Administered']].sum()
first_dose
```

```
Number of persons state wise vaccinated for first dose in India
```

[3]:
```
                                   First Dose Administered
State
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
Karnataka	1.873330e+09
Kerala	1.193845e+09
Ladakh	1.780925e+07
Lakshadweep	4.363655e+06
Madhya Pradesh	1.796605e+09
Maharashtra	2.784364e+09
Manipur	6.740957e+07
Meghalaya	6.261597e+07
Mizoram	4.787308e+07
Nagaland	4.241077e+07
Odisha	1.032633e+09
Puducherry	4.134686e+07
Punjab	5.843466e+08
Rajasthan	2.201044e+09
Sikkim	3.698093e+07
Tamil Nadu	1.288533e+09
Telangana	8.803206e+08
Tripura	1.926897e+08
Uttar Pradesh	2.788411e+09
Uttarakhand	3.631914e+08
West Bengal	1.796450e+09

[4]:
```
print("Number of persons state wise vaccinated for second dose in India")

first_dose = df.groupby('State')[['Second Dose Administered']].sum()
first_dose
```

```
Number of persons state wise vaccinated for second dose in India
```

[4]:

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
Ladakh                                                5.453762e+06
Lakshadweep                                           1.056446e+06
Madhya Pradesh                                        3.169330e+08
Maharashtra                                           7.128811e+08
Manipur                                               1.185815e+07
Meghalaya                                             1.216663e+07
Mizoram                                               9.998418e+06
Nagaland                                              9.204637e+06
Odisha                                                2.513028e+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
```

[5]:
```
male = df["Male(Individuals Vaccinated)"].sum()
print("Number of Males vaccinated are", int(male))
```

```
Number of Males vaccinated are 7138698858
```

[6]:
```
female = df["Female(Individuals Vaccinated)"].sum()
print("Number of females vaccinated are", int(female))
```

```
Number of females vaccinated are 6321628736
```

[7]:
```
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
 13  AEFI                                 5438 non-null   float64
 14  18-44 Years (Doses Administered)     1702 non-null   float64
 15  45-60 Years (Doses Administered)     1702 non-null   float64
 16  60+ Years (Doses Administered)       1702 non-null   float64
 17  18-44 Years(Individuals Vaccinated)  3733 non-null   float64
 18  45-60 Years(Individuals Vaccinated)  3734 non-null   float64
 19  60+ Years(Individuals Vaccinated)    3734 non-null   float64
 20  Male(Individuals Vaccinated)         160 non-null    float64
 21  Female(Individuals Vaccinated)       160 non-null    float64
 22  Transgender(Individuals Vaccinated)  160 non-null    float64
 23  Total Individuals Vaccinated         5919 non-null   float64
dtypes: float64(22), object(2)
memory usage: 1.4+ MB
```

[8]:
```
df.describe(include='object')
```

[8]:

	Updated On	State
count	7845	7845
unique	213	37
top	16/01/2021	Delhi
freq	37	213

[9]:
```
df.shape
```

[9]: (7845, 24)

[10]:
```
df.head()
```

[10]:

	Updated On	State	Total Doses Administered	Sessions	Sites	\
0	16/01/2021	India	48276.0	3455.0	2957.0	
1	17/01/2021	India	58604.0	8532.0	4954.0	
2	18/01/2021	India	99449.0	13611.0	6583.0	
3	19/01/2021	India	195525.0	17855.0	7951.0	
4	20/01/2021	India	251280.0	25472.0	10504.0	

	First Dose Administered	Second Dose Administered	\
0	48276.0	0.0	
1	58604.0	0.0	
2	99449.0	0.0	
3	195525.0	0.0	

```
4                 251280.0                          0.0

   Male (Doses Administered)  Female (Doses Administered)  \
0                        NaN                          NaN
1                        NaN                          NaN
2                        NaN                          NaN
3                        NaN                          NaN
4                        NaN                          NaN

   Transgender (Doses Administered)  …  18-44 Years (Doses Administered)  \
0                               NaN  …                               NaN
1                               NaN  …                               NaN
2                               NaN  …                               NaN
3                               NaN  …                               NaN
4                               NaN  …                               NaN

   45-60 Years (Doses Administered)  60+ Years (Doses Administered)  \
0                               NaN                            NaN
1                               NaN                            NaN
2                               NaN                            NaN
3                               NaN                            NaN
4                               NaN                            NaN

   18-44 Years(Individuals Vaccinated)  45-60 Years(Individuals Vaccinated)  \
0                                  NaN                                  NaN
1                                  NaN                                  NaN
2                                  NaN                                  NaN
3                                  NaN                                  NaN
4                                  NaN                                  NaN

   60+ Years(Individuals Vaccinated)  Male(Individuals Vaccinated)  \
0                                NaN                       23757.0
1                                NaN                       27348.0
2                                NaN                       41361.0
3                                NaN                       81901.0
4                                NaN                       98111.0

   Female(Individuals Vaccinated)  Transgender(Individuals Vaccinated)  \
0                         24517.0                                  2.0
1                         31252.0                                  4.0
2                         58083.0                                  5.0
3                        113613.0                                 11.0
4                        153145.0                                 24.0

   Total Individuals Vaccinated
0                       48276.0
1                       58604.0
```

```
2                      99449.0
3                     195525.0
4                     251280.0

[5 rows x 24 columns]
```

[11]:
```
df.tail()
```

[11]:
```
      Updated On        State  Total Doses Administered  Sessions   Sites   \
7840  11/08/2021  West Bengal                       NaN       NaN      NaN
7841  12/08/2021  West Bengal                       NaN       NaN      NaN
7842  13/08/2021  West Bengal                       NaN       NaN      NaN
7843  14/08/2021  West Bengal                       NaN       NaN      NaN
7844  15/08/2021  West Bengal                       NaN       NaN      NaN

      First Dose Administered  Second Dose Administered  \
7840                      NaN                       NaN
7841                      NaN                       NaN
7842                      NaN                       NaN
7843                      NaN                       NaN
7844                      NaN                       NaN

      Male (Doses Administered)  Female (Doses Administered)  \
7840                        NaN                          NaN
7841                        NaN                          NaN
7842                        NaN                          NaN
7843                        NaN                          NaN
7844                        NaN                          NaN

      Transgender (Doses Administered)  …  18-44 Years (Doses Administered)  \
7840                               NaN  …                                NaN
7841                               NaN  …                                NaN
7842                               NaN  …                                NaN
7843                               NaN  …                                NaN
7844                               NaN  …                                NaN

      45-60 Years (Doses Administered)  60+ Years (Doses Administered)  \
7840                               NaN                           NaN
7841                               NaN                           NaN
7842                               NaN                           NaN
7843                               NaN                           NaN
7844                               NaN                           NaN

      18-44 Years(Individuals Vaccinated)  \
7840                                  NaN
7841                                  NaN
7842                                  NaN
```

```
7843                                  NaN
7844                                  NaN

      45-60 Years(Individuals Vaccinated)  60+ Years(Individuals Vaccinated)  \
7840                                  NaN                                 NaN
7841                                  NaN                                 NaN
7842                                  NaN                                 NaN
7843                                  NaN                                 NaN
7844                                  NaN                                 NaN

      Male(Individuals Vaccinated)  Female(Individuals Vaccinated)  \
7840                           NaN                             NaN
7841                           NaN                             NaN
7842                           NaN                             NaN
7843                           NaN                             NaN
7844                           NaN                             NaN

      Transgender(Individuals Vaccinated)  Total Individuals Vaccinated
7840                                  NaN                           NaN
7841                                  NaN                           NaN
7842                                  NaN                           NaN
7843                                  NaN                           NaN
7844                                  NaN                           NaN

[5 rows x 24 columns]
```

[ ]:

[ ]:

[ ]: