

```
In [2]: import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import matplotlib.pyplot as plt
import plotly.offline as py
import plotly.graph_objs as go
import plotly.express as px
import seaborn as sns
import warnings
```

```
In [3]: df = pd.read_csv(r"D:\feynn labs\TB_data.csv")
df.head()
```

Out[3]:

	State/Uts	No of Tobacco-TB patients with known Tobacco usage status, of notified)-Public	% of Tobacco-TB patients with known Tobacco usage status, of notified)-Public	No of Tobacco-TB patients with known Tobacco usage status,of notified)-Private	% of Tobacco-TB patients with known Tobacco usage status, of notified)-Private	No of Tobacco-TB patients with known Tobacco usage status, of notified)-Total	% of Tobacco-TB patients with known Tobacco usage status, of notified)-Total	No of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public	Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public	No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Private	Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Private	T id a scre tho t :
0	Andaman & Nicobar Islands	495	91.0	3.0	75.0	498	90.9	89	18.0	0.0	0.0	
1	Andhra Pradesh	63627	96.2	26477.0	98.1	90104	96.8	9786	15.4	1409.0	5.3	
2	Arunachal Pradesh	2256	75.0	3.0	50.0	2259	74.9	303	13.4	0.0	0.0	
3	Assam	30134	71.7	4074.0	68.8	34208	71.4	7929	26.3	325.0	8.0	
4	Bihar	44248	54.4	36165.0	42.8	80413	48.5	4139	9.4	1152.0	3.2	

```
In [4]: df.dtypes
```

Out[4]:

```
State/Uts
object
No of Tobacco-TB patients with known Tobacco usage status, of notified)-Public
int64
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Public
float64
No of Tobacco-TB patients with known Tobacco usage status,of notified)-Private
float64
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Private
float64
No of Tobacco-TB patients with known Tobacco usage status, of notified)-Total
int64
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Total
float64
No of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public
int64
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public
float64
No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Private
float64
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Private
float64
No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Total
int64
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Total
float64
No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public
int64
Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public
float64
No of Tobacco users linked with Tobacco cessation centres,of tobacco users)-Private
float64
Percentage of Tobacco users linked with Tobacco cessation centres, n (% of tobacco users)-Private
float64
No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total
int64
Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total
float64
dtype: object
```

```
In [5]: df.shape
```

```
Out[5]: (37, 19)
```

```
In [8]: df.isnull().sum()
```

```
Out[8]: State/Uts
0
No of Tobacco-TB patients with known Tobacco usage status, of notified)-Public
0
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Public
0
No of Tobacco-TB patients with known Tobacco usage status,of notified)-Private
1
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Private
1
No of Tobacco-TB patients with known Tobacco usage status, of notified)-Total
0
% of Tobacco-TB patients with known Tobacco usage status, of notified)-Total
0
No of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public
0
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public
0
No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Private
1
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Private
1
No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Total
0
Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Total
0
No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public
0
Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public
0
No of Tobacco users linked with Tobacco cessation centres,of tobacco users)-Private
4
Percentage of Tobacco users linked with Tobacco cessation centres, n (% of tobacco users)-Private
4
No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total
0
Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total
0
dtype: int64
```

```
In [7]: df.info
```

```
Out[7]: <bound method DataFrame.info of                                State/Uts \
0                                Andaman & Nicobar Islands
1                                Andhra Pradesh
2                                Arunachal Pradesh
3                                Assam
4                                Bihar
5                                Chandigarh
6                                Chhattisgarh
7    Dadra and Nagar Haveli and Daman and Diu
8                                Delhi
9                                Goa
10                               Gujarat
11                               Haryana
12                               Himachal Pradesh
13                               Jammu & Kashmir
14                               Jharkhand
15                               Karnataka
16                               Kerala
17                               Ladakh
18                               Lakshadweep
19                               Madhya Pradesh
20                               Maharashtra
21                               Manipur
22                               Meghalaya
23                               Mizoram
24                               Nagaland
25                               Odisha
26                               Puducherry
27                               Punjab
28                               Rajasthan
29                               Sikkim
30                               Tamil Nadu
31                               Telangana
32                               Tripura
33                               Uttar Pradesh
34                               Uttarakhand
35                               West Bengal
```

No of Tobacco-TB patients with known Tobacco usage status, of notified)-Public \

0	495
1	63627
2	2256
3	30134
4	44248
5	3508
6	25332
7	548
8	51623
9	1553
10	104192
11	54848
12	15625
13	10254
14	36887
15	59878
16	17712
17	297
18	22
19	81505
20	128562
21	1709
22	3586
23	2042
24	3141
25	52549
26	1480
27	40507
28	106155
29	947
30	71409
31	51000
32	2215
33	301001
34	21611
35	80975
36	1473433

% of Tobacco-TB patients with known Tobacco usage status, of notified)-Public \

0	91.0
1	96.2
2	75.0
3	71.7
4	54.4
5	94.3
6	86.0
7	64.9
8	66.2
9	92.6
10	95.9
11	89.5
12	97.5
13	90.1
14	78.6
15	88.9
16	85.9
17	88.9
18	100.0
19	58.3
20	84.4
21	72.1
22	77.3
23	97.9
24	82.5
25	94.6
26	97.0
27	84.9
28	80.6
29	70.8
30	91.2
31	93.5
32	68.0
33	71.8
34	95.1
35	86.3
36	79.5

No of Tobacco-TB patients with known Tobacco usage status,of notified)-Private \

0	3.0
1	26477.0

2	3.0
3	4074.0
4	36165.0
5	47.0
6	5815.0
7	57.0
8	1686.0
9	27.0
10	35780.0
11	14373.0
12	437.0
13	513.0
14	4611.0
15	9824.0
16	2070.0
17	9.0
18	NaN
19	20132.0
20	53968.0
21	135.0
22	182.0
23	19.0
24	357.0
25	4025.0
26	2.0
27	7662.0
28	28475.0
29	49.0
30	12182.0
31	16920.0
32	31.0
33	57695.0
34	4206.0
35	6168.0
36	354179.0

% of Tobacco-TB patients with known Tobacco usage status, of notified)-Private \

0	75.0
1	98.1
2	50.0
3	68.8
4	42.8
5	73.4
6	62.7
7	75.0
8	16.5
9	6.8
10	90.6
11	82.6
12	93.4
13	88.1
14	40.1
15	83.5
16	71.4
17	81.8
18	NaN
19	40.9
20	69.8
21	52.5
22	56.5
23	95.0
24	95.7
25	91.6
26	100.0
27	78.1
28	73.7
29	66.2
30	68.9
31	90.6
32	77.5
33	49.4
34	90.5
35	77.1
36	62.4

No of Tobacco-TB patients with known Tobacco usage status, of notified)-Total \

0	498
1	90104
2	2259
3	34208
4	80413
5	3555
6	31147

7	605
8	53309
9	1580
10	139972
11	69221
12	16062
13	10767
14	41498
15	69702
16	19782
17	306
18	22
19	101637
20	182530
21	1844
22	3768
23	2061
24	3498
25	56574
26	1482
27	48169
28	134630
29	996
30	83591
31	67920
32	2246
33	358696
34	25817
35	87143
36	1827612

% of Tobacco-TB patients with known Tobacco usage status, of notified)-Total \

0	90.9
1	96.8
2	74.9
3	71.4
4	48.5
5	94.0
6	80.4
7	65.7
8	60.4
9	76.2
10	94.5
11	88.0
12	97.4
13	90.0
14	71.0
15	88.1
16	84.1
17	88.7
18	100.0
19	53.8
20	79.5
21	70.2
22	75.9
23	97.9
24	83.7
25	94.4
26	97.1
27	83.7
28	79.1
29	70.5
30	87.1
31	92.8
32	68.2
33	66.9
34	94.4
35	85.6
36	75.5

No of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public \

0	89
1	9786
2	303
3	7929
4	4139
5	305
6	7986
7	67
8	3440
9	105
10	16920
11	2572

12	1855
13	769
14	4280
15	11159
16	2614
17	7
18	1
19	13625
20	11941
21	330
22	1384
23	616
24	591
25	9966
26	224
27	1693
28	9100
29	77
30	13718
31	6533
32	478
33	29311
34	2492
35	18126
36	194531

Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Public

\	
0	18.0
1	15.4
2	13.4
3	26.3
4	9.4
5	8.7
6	31.5
7	12.2
8	6.7
9	6.8
10	16.2
11	4.7
12	11.9
13	7.5
14	11.6
15	18.6
16	14.8
17	2.4
18	4.5
19	16.7
20	9.3
21	19.3
22	38.6
23	30.2
24	18.8
25	19.0
26	15.1
27	4.2
28	8.6
29	8.1
30	19.2
31	12.8
32	21.6
33	9.7
34	11.5
35	22.4
36	13.2

No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Private \

0	0.0
1	1409.0
2	0.0
3	325.0
4	1152.0
5	2.0
6	336.0
7	2.0
8	16.0
9	1.0
10	2365.0
11	486.0
12	22.0
13	24.0
14	91.0
15	566.0

16	110.0
17	1.0
18	NaN
19	974.0
20	1409.0
21	12.0
22	60.0
23	5.0
24	70.0
25	262.0
26	1.0
27	85.0
28	1541.0
29	2.0
30	958.0
31	754.0
32	0.0
33	1686.0
34	185.0
35	1100.0
36	16012.0

Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Private

\	
0	0.0
1	5.3
2	0.0
3	8.0
4	3.2
5	4.3
6	5.8
7	3.5
8	0.9
9	3.7
10	6.6
11	3.4
12	5.0
13	4.7
14	2.0
15	5.8
16	5.3
17	11.1
18	NaN
19	4.8
20	2.6
21	8.9
22	33.0
23	26.3
24	19.6
25	6.5
26	50.0
27	1.1
28	5.4
29	4.1
30	7.9
31	4.5
32	0.0
33	2.9
34	4.4
35	17.8
36	4.5

No of Tobacco users identified amongst screened,of those with known tobacco usage status)-Total \

0	89
1	11195
2	303
3	8254
4	5291
5	307
6	8322
7	69
8	3456
9	106
10	19285
11	3058
12	1877
13	793
14	4371
15	11725
16	2724
17	8
18	1
19	14599

20	13350
21	342
22	1444
23	621
24	661
25	10228
26	225
27	1778
28	10641
29	79
30	14676
31	7287
32	478
33	30997
34	2677
35	19226
36	210543

Percentage of Tobacco users identified amongst screened, of those with known tobacco usage status)-Total

\	
0	17.9
1	12.4
2	13.4
3	24.1
4	6.6
5	8.6
6	26.7
7	11.4
8	6.5
9	6.7
10	13.8
11	4.4
12	11.7
13	7.4
14	10.5
15	16.8
16	13.8
17	2.6
18	4.5
19	14.4
20	7.3
21	18.5
22	38.3
23	30.1
24	18.9
25	18.1
26	15.2
27	3.7
28	7.9
29	7.9
30	17.6
31	10.7
32	21.3
33	8.6
34	10.4
35	22.1
36	11.5

No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public \

0	30
1	2456
2	171
3	1497
4	917
5	60
6	3595
7	38
8	777
9	8
10	7145
11	1044
12	1674
13	438
14	1349
15	3326
16	1567
17	4
18	1
19	2697
20	4069
21	82
22	254
23	548



24	381
25	4454
26	220
27	278
28	3141
29	5
30	3231
31	3455
32	44
33	6824
34	800
35	6173
36	62753

Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Public \

0	33.7
1	25.1
2	56.4
3	18.9
4	22.2
5	19.7
6	45.0
7	56.7
8	22.6
9	7.6
10	42.2
11	40.6
12	90.2
13	57.0
14	31.5
15	29.8
16	59.9
17	57.1
18	100.0
19	19.8
20	34.1
21	24.8
22	18.4
23	89.0
24	64.5
25	44.7
26	98.2
27	16.4
28	34.5
29	6.5
30	23.6
31	52.9
32	9.2
33	23.3
34	32.1
35	34.1
36	32.3

No of Tobacco users linked with Tobacco cessation centres,of tobacco users)-Private \

0	NaN
1	326.0
2	NaN
3	93.0
4	41.0
5	0.0
6	140.0
7	2.0
8	5.0
9	1.0
10	895.0
11	161.0
12	18.0
13	15.0
14	33.0
15	168.0
16	64.0
17	1.0
18	NaN
19	92.0
20	404.0
21	1.0
22	3.0
23	5.0
24	24.0
25	114.0
26	1.0
27	4.0
28	572.0

29	1.0
30	165.0
31	428.0
32	NaN
33	236.0
34	38.0
35	353.0
36	4404.0

Percentage of Tobacco users linked with Tobacco cessation centres, n (% of tobacco users)-Private \

0	NaN
1	23.1
2	NaN
3	28.6
4	3.6
5	0.0
6	41.7
7	100.0
8	31.3
9	100.0
10	37.8
11	33.1
12	81.8
13	62.5
14	36.3
15	29.7
16	58.2
17	100.0
18	NaN
19	9.4
20	28.7
21	8.3
22	5.0
23	100.0
24	34.3
25	43.5
26	100.0
27	4.7
28	37.1
29	50.0
30	17.2
31	56.8
32	NaN
33	14.0
34	20.5
35	32.1
36	27.5

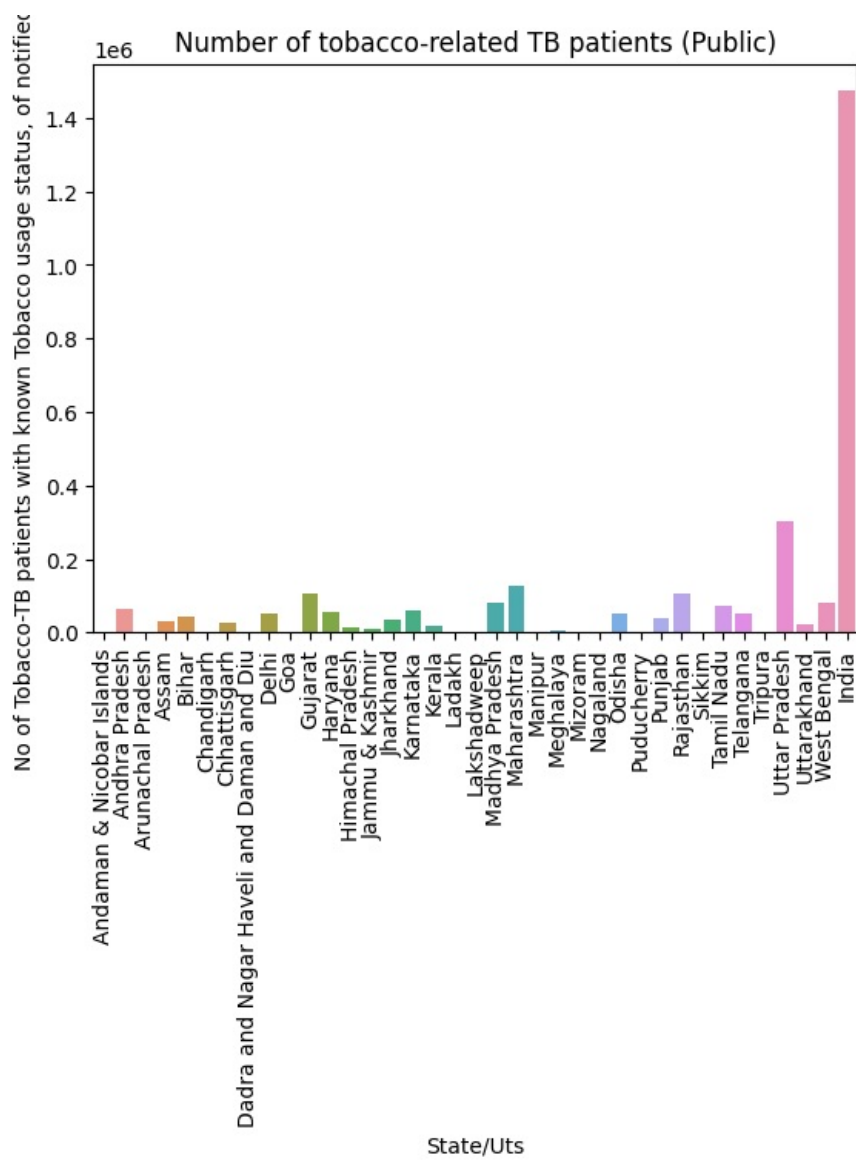
No of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total \

0	30
1	2782
2	171
3	1590
4	958
5	60
6	3735
7	40
8	782
9	9
10	8040
11	1205
12	1692
13	453
14	1382
15	3494
16	1631
17	5
18	1
19	2789
20	4473
21	83
22	257
23	553
24	405
25	4568
26	221
27	282
28	3713
29	6
30	3396
31	3883
32	44
33	7060

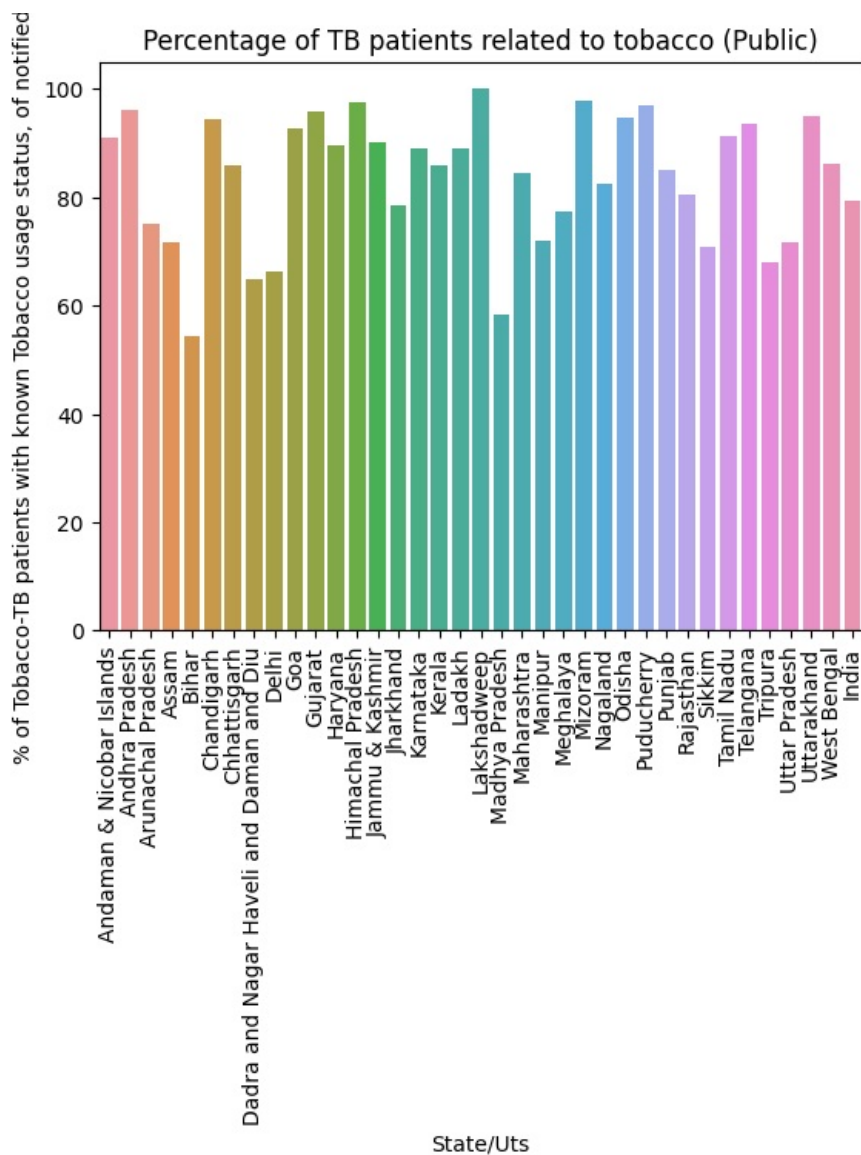
34	838
35	6526
36	67157

	Percentage of Tobacco users linked with Tobacco cessation centres, of tobacco users)-Total
0	33.7
1	24.9
2	56.4
3	19.3
4	18.1
5	19.5
6	44.9
7	58.0
8	22.6
9	8.5
10	41.7
11	39.4
12	90.1
13	57.1
14	31.6
15	29.8
16	59.9
17	62.5
18	100.0
19	19.1
20	33.5
21	24.3
22	17.8
23	89.0
24	61.3
25	44.7
26	98.2
27	15.9
28	34.9
29	7.6
30	23.1
31	53.3
32	9.2
33	22.8
34	31.3
35	33.9
36	31.9

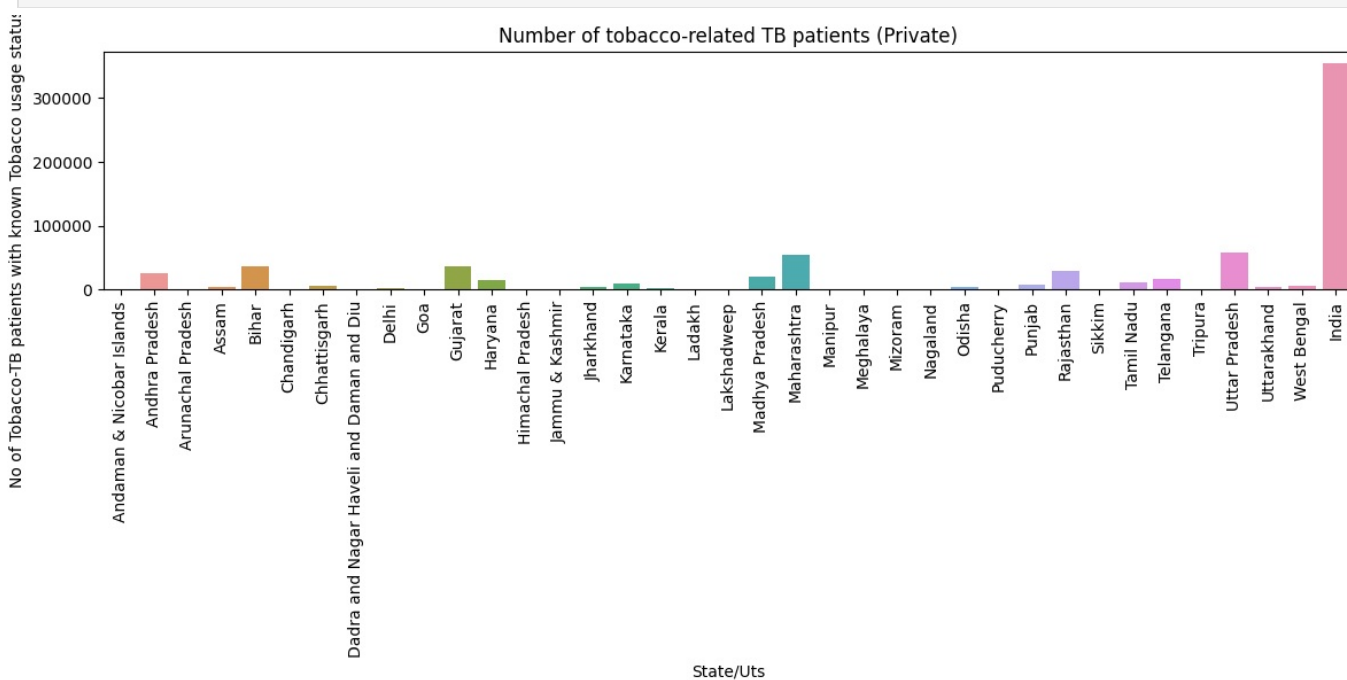
```
In [9]: sns.barplot(x=df['State/Uts'] , y=df['No of Tobacco-TB patients with known Tobacco usage status, of notified)-Public'])
plt.xticks(rotation=90)
plt.title('Number of tobacco-related TB patients (Public)')
plt.show()
```



```
In [10]: sns.barplot(x=df['State/Uts'] , y=df['% of Tobacco-TB patients with known Tobacco usage status, of notified')-Pul
plt.xticks(rotation=90)
plt.title('Percentage of TB patients related to tobacco (Public)')
plt.show()
```

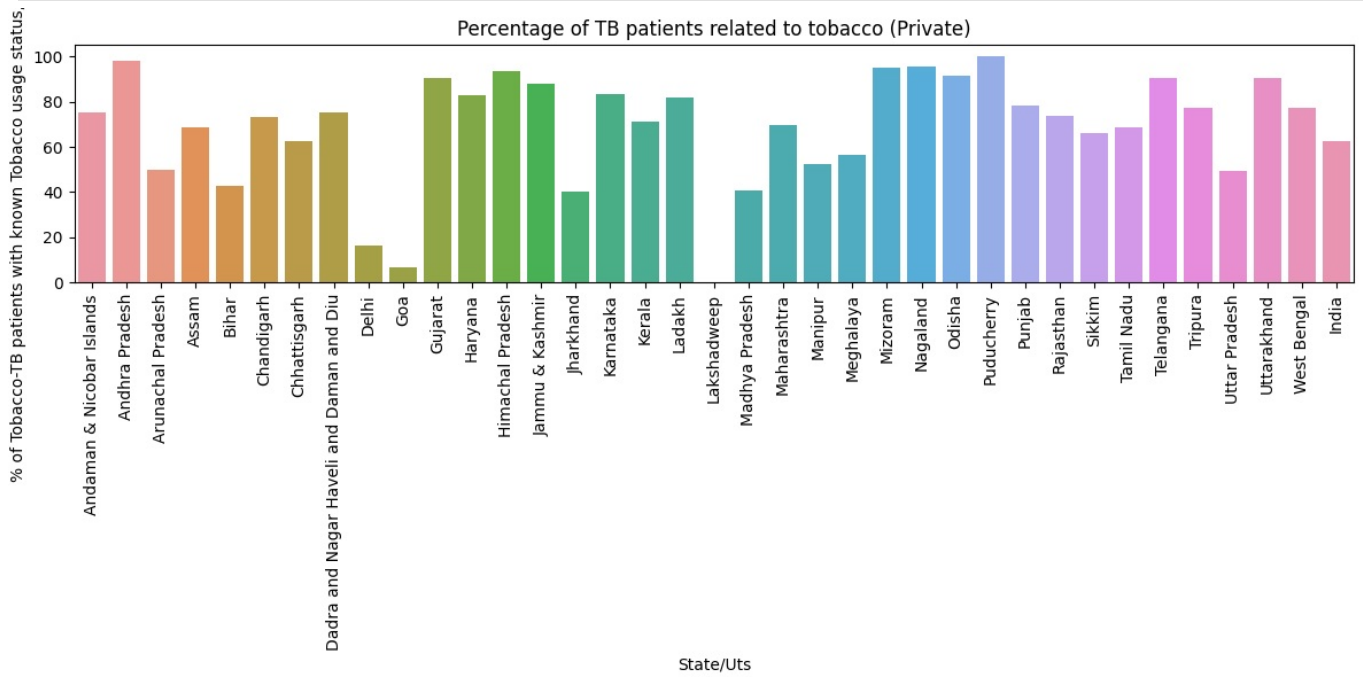


```
In [11]: plt.figure(figsize=(12, 6))
sns.barplot(x=df['State/Uts'], y=df['No of Tobacco-TB patients with known Tobacco usage status,of notified')-Private)
plt.xticks(rotation=90)
plt.title('Number of tobacco-related TB patients (Private)')
plt.tight_layout()
plt.show()
```

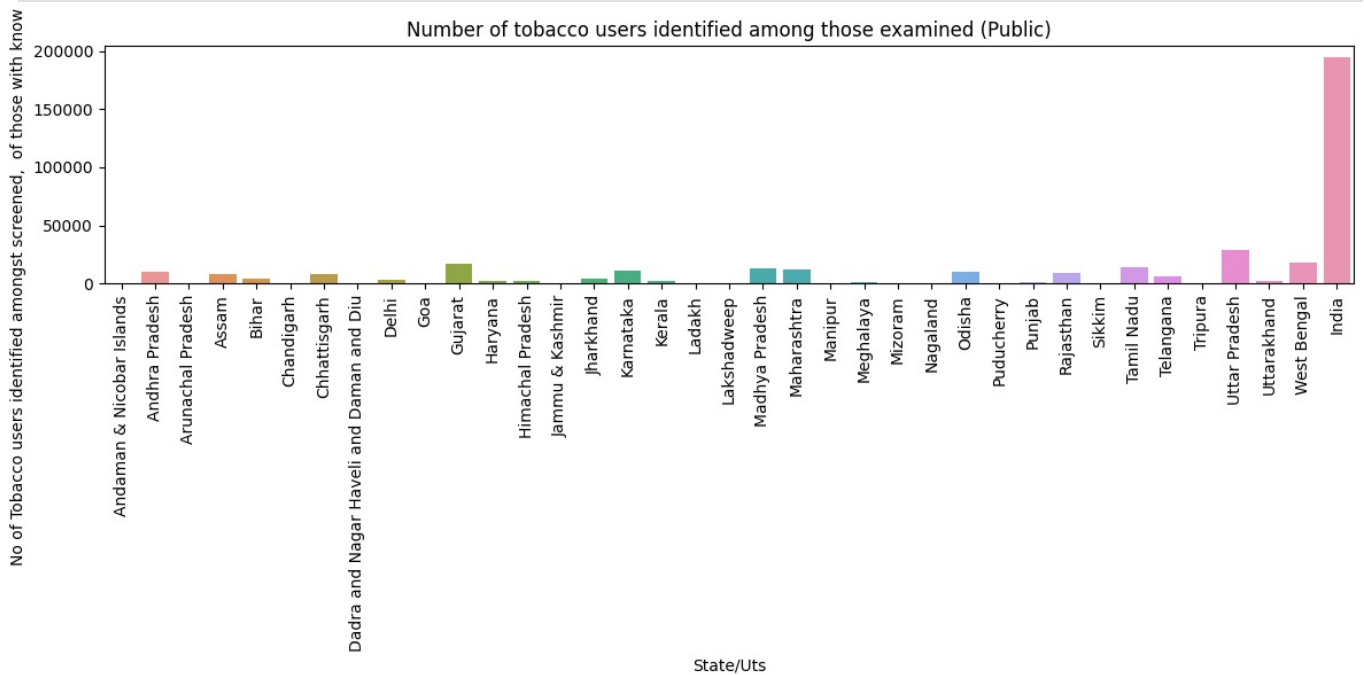


```
In [12]: plt.figure(figsize=(12, 6))
sns.barplot(x=df['State/Uts'], y=df['% of Tobacco-TB patients with known Tobacco usage status, of notified')-Private)
plt.xticks(rotation=90)
plt.title('Percentage of TB patients related to tobacco (Private)')
```

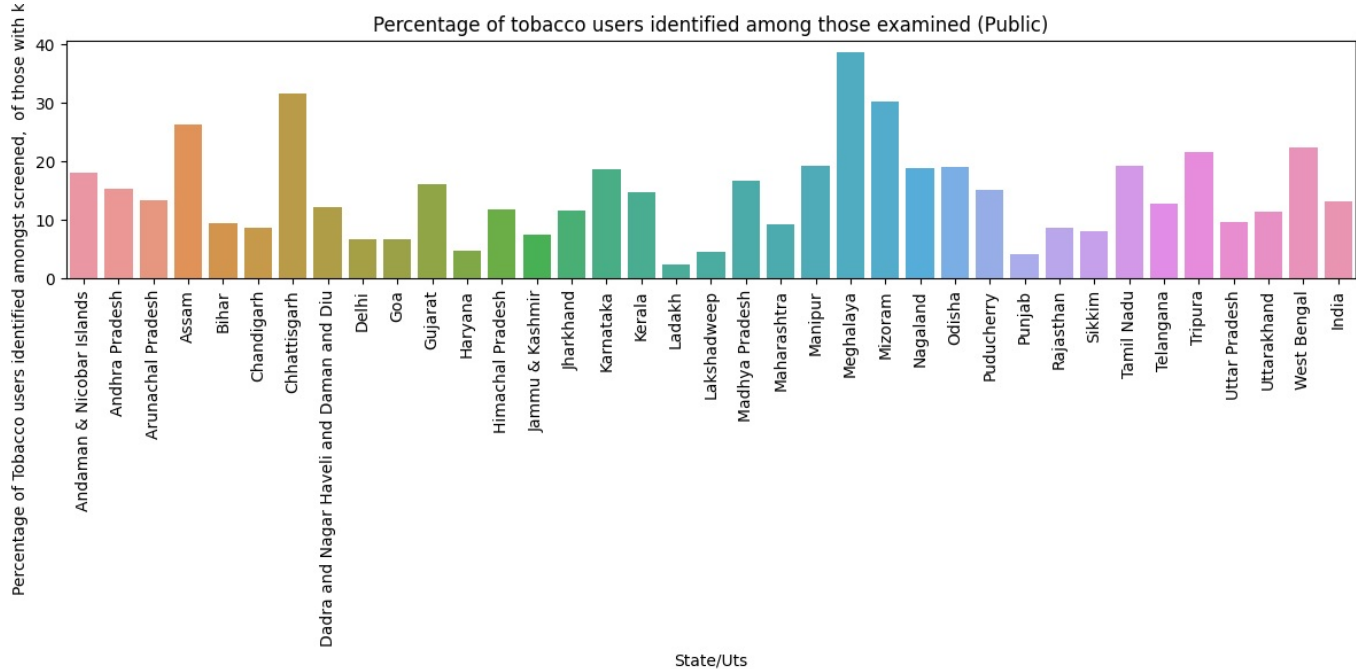
```
plt.tight_layout()
plt.show()
```



```
In [13]: plt.figure(figsize=(12, 6))
sns.barplot(x=df['State/UTs'], y=df['No of Tobacco users identified amongst screened, of those with known tobacco users identified among those examined (Public)'])
plt.xticks(rotation=90)
plt.title('Number of tobacco users identified among those examined (Public)')
plt.tight_layout()
plt.show()
```



```
In [14]: plt.figure(figsize=(12, 6))
sns.barplot(x=df['State/UTs'], y=df['Percentage of Tobacco users identified amongst screened, of those with known tobacco users identified among those examined (Public)'])
plt.xticks(rotation=90)
plt.title('Percentage of tobacco users identified among those examined (Public)')
plt.tight_layout()
plt.show()
```



In [ ]:

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